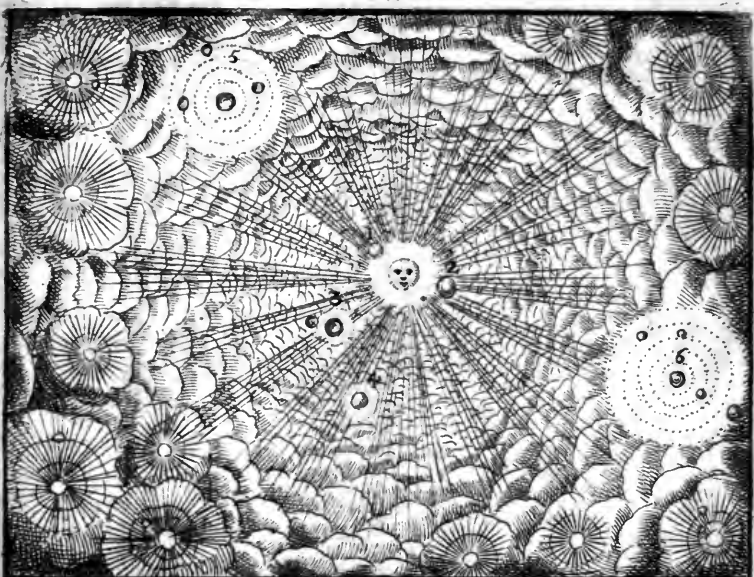
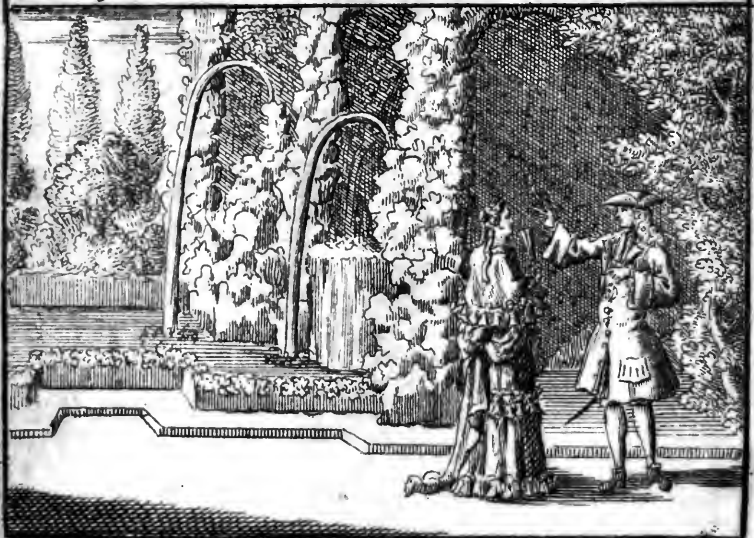


THE UNIVERSITY OF CHICAGO PRESS





1 Mercury, 2 Venus, 3 the Earth, 4 Mars, 5 Jupiter, 6 Saturne.



Great Fontenelle! the Heavens did Descry,
And taught the Ladies his Philosophy.

A
Week's Conversation
ON THE
PLURALITY
OF
WORLD S.

By Monsieur DE FONTENELLE.

THE SIXTH EDITION.

Translated by

Mrs. A. BEHN, } { JOHN HUGHES Esq; and
Mr. J. GLANVIL, } { WILLIAM GARDNER Esq.

To which is added.

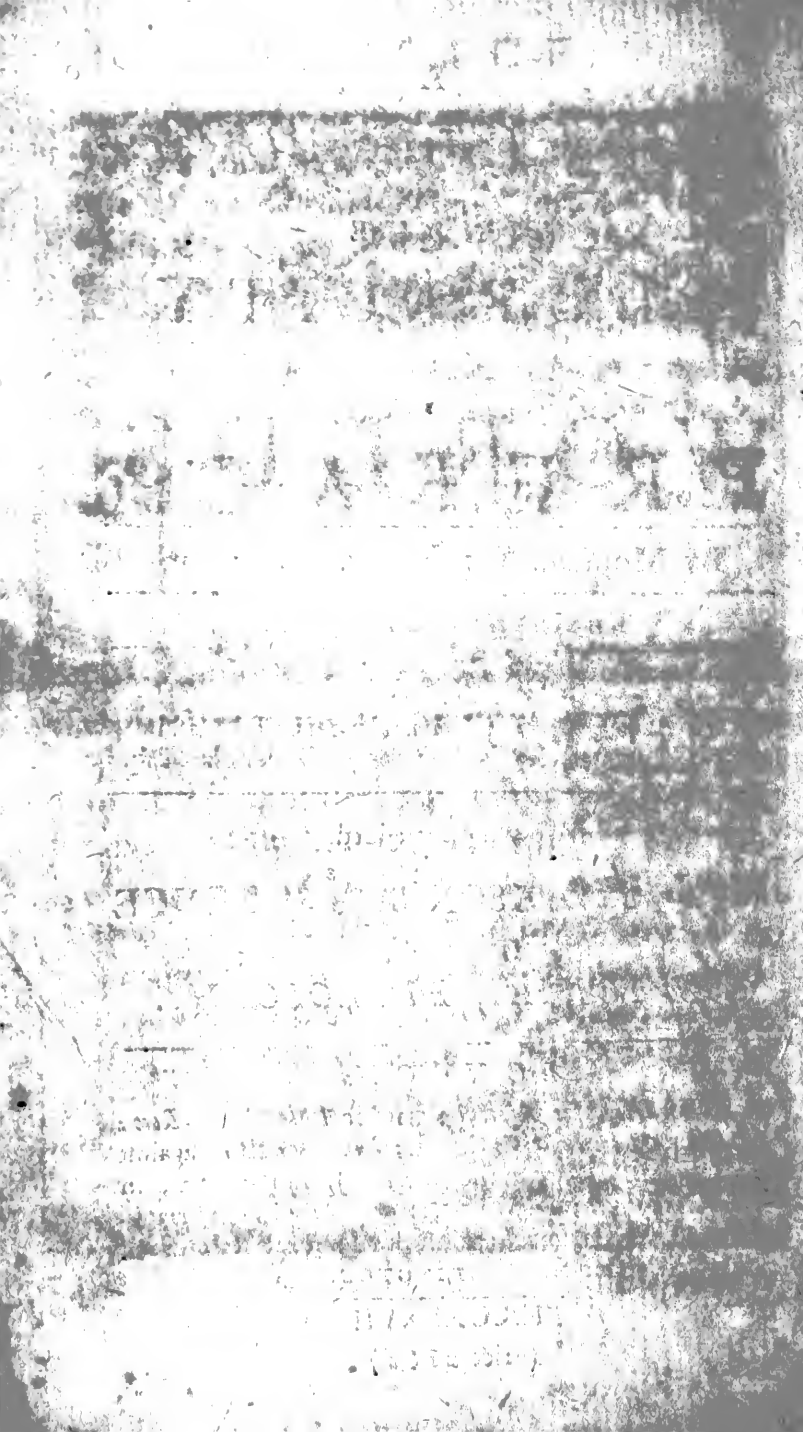
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ON THE
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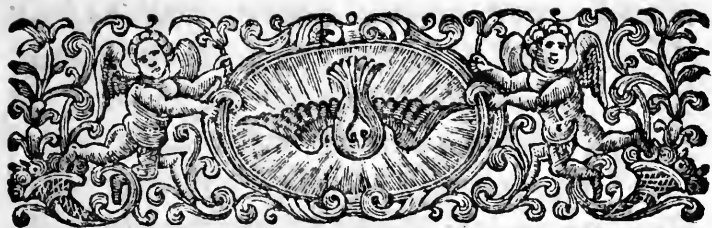
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Printed for A. BETTESWORTH, in *Pater-Noster-Roco*;
E. CURLL, in *Covent-Garden*; W. FEALES, against
St. Clements-Church in the Strand; J. BRINDLEY, in
New-Bond-street; R. WELLINGTON, without *Temple-*
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Fleet-street; and B. WELLINGTON.

MDCCXXXVII

(Price 2 s 6 d.)





P R E F A C E.



A M pretty much in the same CASE with CICERO, when he undertook to write of Philosophical Matters in the Latin Tongue, there being, then, no Books upon that Subject, but what were in Greek: He was told, that such an Attempt would be useless; because, those who were Lovers of Philosophy, would rather take the Pains to search for it in Greek Writers, than make use of Latin ones, which treated of it, but at second Hand; and that those who had no Relish for

A 3

this

this Science, would never trouble their Heads with either Greek or Latin. To these Objectors, he answered, it would happen quite otherwise; for, says he, the great Ease People will find in reading Latin Books, will tempt those to be Philosophers who are none; and they who already are Philosophers, by reading Greek Books, will be very glad to see how the Subject is handled in Latin.

CICERO might with good Reason answer as he did, because the Excellency of his Genius, and the great Reputation he had acquired, warranted the Success of all he wrote: But in a Design, not much unlike his, I am far from having those Grounds of Confidence which he had. My Purpose is to discourse of Philosophy, but not directly in a Philosophical Manner; and to raise it to such a Pitch, that it shall not be too dry and insipid a Subject to please Gentlemen; nor too mean and trifling to entertain Scholars. Should I be told (as Cicero was) that such a
Discourse

Discourse as this, would not please the Learned because it cannot teach Them any Thing; nor the Illiterate, because they will have no Mind to learn; I will not answer as he did: It may be, endeavouring to please every Body, I have pleased no Body; now, to keep a Medium betwixt two Extreams, is so very difficult, that I believe, I shall never desire to put myself a Second Time to the like Trouble.

If I should acquaint those who are to read this Book, and have any Knowledge of Natural Philosophy, that I do not pretend to Instruct, but only to Divert them; by presenting to their View, in a gay and pleasing Dress, what they have already seen in a more grave and solid Habit: Not but They, to whom the Subject is New, may be both Diverted and Instructed: The first will act contrary to my Intention, if they look for Profit, and the last, if they seek for nothing but Pleasure.

I have

I have chosen that Part of Philosophy which is most likely to excite Curiosity; for I think nothing concerns us more, than to enquire how this World, which we inhabit is made; and whether there be any other Worlds like it, which are also inhabited as This is? But after all, it is at every Body's Discretion, how far they will run their Disquisitions: Those who have any Thoughts to lose, may throw them away upon such Subjects as these; but, I suppose, such as can employ their Time better, will not be at so vain and fruitless an Expence.

In these Discourses, I have introduced a LADY, to be instructed in Things of which she never heard; and I have made use of this Fiction, to render the Book the more exceptable, and to give Encouragement to Gentlewomen, by the Example of one of their own Sex, who without any supernatural Parts, or Tincture of Learning, understands what is said to her; and without any Confusion, rightly apprehends what

Vortexes

Vortexes and other Worlds are : And why may not there be a Woman like this imaginary Marchioness, since her Conceptions are no other than such as she could not chuse but have ?

To penetrate into things either obscure in themselves, or but darkly expressed, requires deep Meditation, and an earnest Application of the Mind ; but here, nothing more is requisite than to read and imprint an Idea of what is read in the Fancy, which will certainly be clear enough. I shall desire no more of the Fair Sex, than that they will peruse this System of Philosophy, with the same Application that they do a Romance or Novel, when they would retain the Plot, or find out all its Beauties. It is true, that the Ideas of this are less familiar to most Ladies than those of Romances, but they are not more obscure ; for at most, twice or thrice thinking, will render them very perspicuous.

I have not composed an airy System, which has no Foundation at all: I have made use of some true Philosophical Arguments, and of as many as I thought necessary; but it falls out very luckily in this Subject, that the Physical-Ideas are in themselves very diverting; and as they convince and satisfy Reason, so at the same Time they present to the Imagination a Prospect which looks as if it were made on purpose to please it.

*When I meet with any Fragments which are not of this kind, I put them into some pretty strange Dress: Virgil has done the like in his Georgicks; when his Subject is very dry, he adorns it with pleasant Digressions: Ovid has done the same in his Art of Love; and though his Subject be of itself very pleasing, yet he thought it tedious to talk of nothing but Love. My Subject has more need of Digressions than his, yet I have made use of them very sparingly, and of such only, as the natural Liberty of Conversation allows: I have placed them only where I thought my Readers
would*

would be pleased to meet with them; the greatest Part of them are in the Beginning of the Book, because the Mind cannot at first be so well acquainted with the principal Ideas which are presented to it; and, in a Word, they are taken from the Subject itself; or as near to it, as is possible.

I have related nothing concerning the Inhabitants of the several Worlds, which may seem fabulous, or chimerical; but have said whatever may be reasonably thought of them; and the Visions which I have added, have some real Foundation; what is true, and what is false are mingled together, but so as to be easily distinguished: I will not undertake to justify so fantastical and odd a Composition, which is the principal Point of the Work, and yet for which, I can give no very good Reason.

There remains no more to be said in this Place, to a sort of People, who perhaps will not be easily satisfied, though I have good Reasons to give them; but,
that

viii. P R E F A C E.

that the best which can be given will not satisfy them. These are the scrupulous Persons who imagine, that the placing Inhabitants any where, but upon the Earth, will prove dangerous to Religion: I know how excessively tender some are in religious Matters, and therefore I am very unwilling to give any Offence, in what I publish, to People whose Opinion is contrary to that I maintain: But Religion can receive no Prejudice by my System, which fills an Infinity of Worlds with Inhabitants, if a little Error of the Imagination be but rectified. When it is said the Moon is inhabited, some presently fancy that there are such Men there, as ourselves; and Priests without any more ado, think him an Atheist, who is of that Opinion. None of Adam's Posterity, cry they, ever travelled so far as the Moon; nor were any Colonies ever planted in that Region. I grant it. The Men in the Moon are not the Sons of Adam: And here again Theology would be puzzled, if there should be Men any where,

who

who never descended from him. To say no more, this is the great Difficulty to which all others may be reduced: To clear it by a larger Explanation, I must make use of Terms which deserve greater Respect, than to put into a Treatise, so far from being serious as this is. But perhaps there is no need of answering the Objection, for it concerns no Body but the Men in the Moon; and I never yet affirmed there are Men there; if any ask what the Inhabitants are, if they be not Men? All I can say is, that I never saw them; and it is not because I have seen them; that I speak of them: Let none however think, that I say there are no Men in the Moon, purposely to avoid the Objection made against me; for it appears it is impossible there should be any Men there, according to the Idea I have framed of that infinite Diversity and Variety, which is to be observed in the Works of Nature; this Idea runs through the whole Book, and cannot be contradicted by any Philosopher: Nay, I believe I shall only hear this Objection

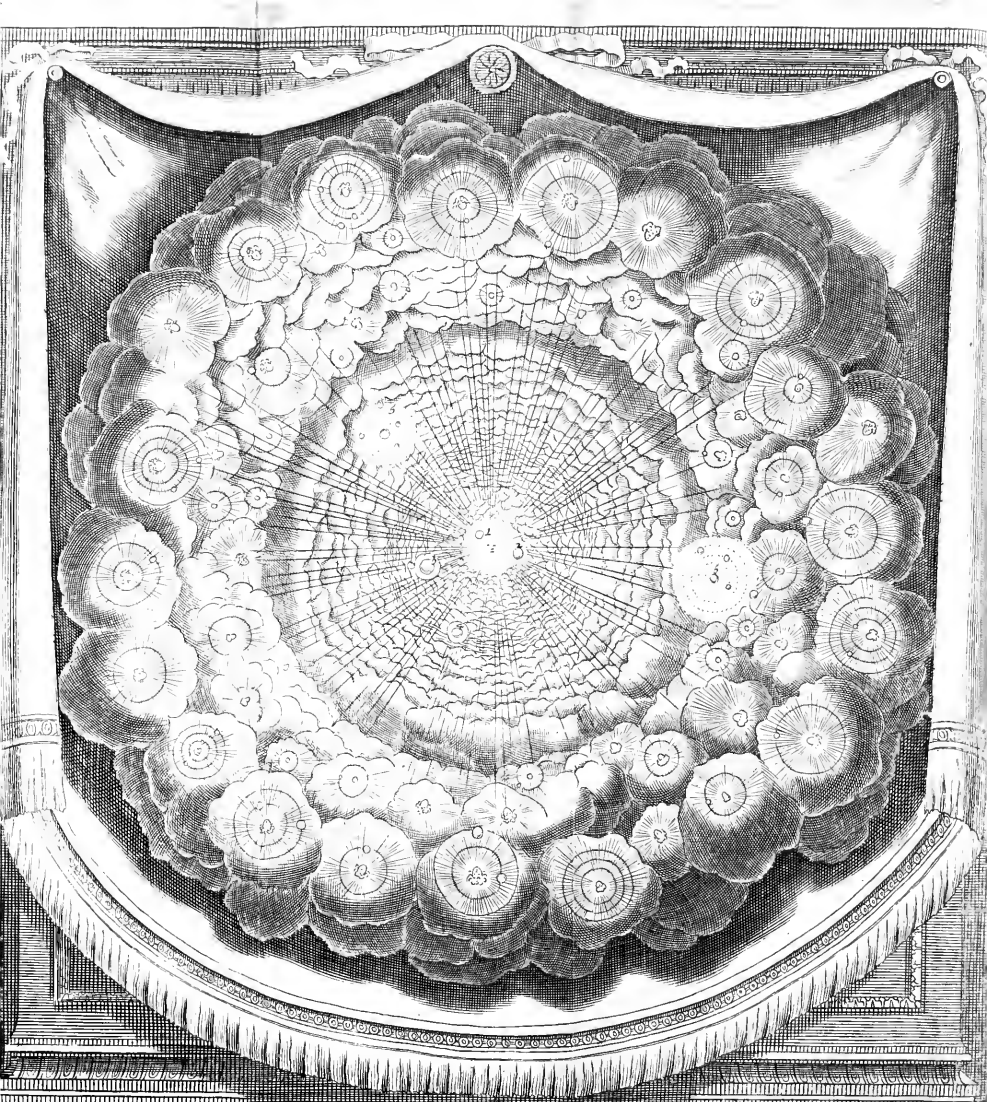
jection started by such as shall speak of these Discourses, without having read them. But is this a Point to be depended on? No, on the contrary, I should more probably fear, that the Objection might be made to me from many Passages.

The Reader will find in this Edition besides many Improvements interspersed in the Body of the Work, one New Conversation, in which I have put together those Reasonings, which I had omitted in the foregoing ones; and have subjoined some Late Discoveries in the Firmament, several of which have never yet been made Publick.

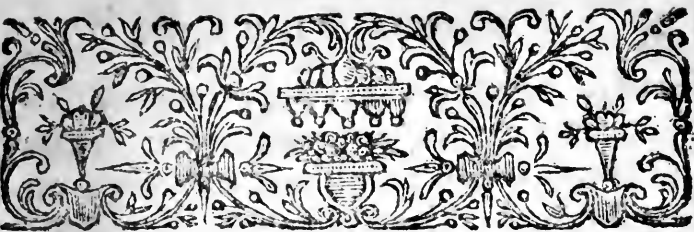
F O N T E N E L L E

To





1. Mercury. 2. Venus. 3. The Earth. 4. Mars. 5. Jupiter. 6. Saturn



FONTENELLE's
Plurality of WORLDS.

To Monsieur L.

IO give you, Sir, a particular account how I pass'd my time in the Country with the Marchioness of G*****, would amount to a Volume; and what is worse, a Volume of Philosophy. I know you expected Entertainments of other kinds, such as Dancing, Gaming, Hunting, &c. Instead of which, you must take up with Vortex's, Planets, and New Worlds; these were the Subject of our Conversation. And by good luck, as you are a Philosopher;

it will be no great disappointment to you, but on the contrary, I fancy, you will be pleas'd, that I have brought over the Marchioness to our Party; we could not have gain'd a more considerable Person, for Youth and Beauty are ever inestimable: If Wisdom would appear with Success to Mankind, do you think she would not do well to take upon her the Person of the Countess? And yet was her Company but half so agreeable, all the World would run mad after Wisdom. But tho' I tell you all the Discourse I had with the Lady, you must not expect Miracles from me. It is impossible, without her Wit, to express what she said, in the same manner she spake it: For my part, I think her very learned, from the great Disposition she has to Learning. It is not poring upon Books alone that makes a Man of Understanding. I know many that have done nothing else, and yet I fancy are not one tittle the wiser. But perhaps you expect, before I enter upon my Subject, I should describe the Lady's House, with its Situation, &c. Many great Palaces have

have been turn'd inside outward upon far less occasion. But I intend to save you and myself that labour; let it suffice that I tell you, I found no Company with the Marchioness, and I was not at all displeas'd at it. The two first Days drain'd me of all the News I brought from *Paris*; what I now send you is the rest of our Conversation, which I will divide into so many parts, as we were Evenings together.

The First Evening.

That the Earth is a Planet which turns on itself, and round the Sun.

WE went one Evening after Supper to walk in the Park: the Air was extremely refreshing, because that Day had been very hot; the Moon had been up about an hour, and her Lustre between the Trees made a most agreeable

able Mixture of Light and Darkneſs; the Stars were in all their Glory, and not a Cloud appear'd throughout the Sky; I was muſing on this awful Proſpect; but who can think long of the Moon and Stars in the Company of a pretty Woman! I am much miſtaken if that's a time for Contemplation: Well, Madam, *ſaid I to the Marchionefs*, is not the Night as pleaſant as the Day? The Day, *ſaid ſhe*, like a fair Beauty, is clear and dazzling; but the Night, like a brown Beauty, more ſoft and moving. You are generous, Madam, *I reply'd*, to prefer the Brown, you that have all the Charms that belong to the Fair; but is there any thing more beautiful in Nature than the Day? The Heroines of Romances are generally fair; and that Beauty muſt be perfect, which has all the Advantages of Imagination. Tell not me, *ſaid ſhe*, of perfect Beauty, nothing can be ſo that is not moving. But ſince you talk of Romances, why do Lovers in their Songs and Elegies addreſs themſelves to the Night? 'Tis the Night, Madam, *ſaid I*, that crowns their Joys, and therefore de-
ſerves

serves their thanks : But 'tis the Night, *said she*, that hears their Complaints ; and how comes it to pass the Day is so little trusted with their Secrets ? I confess, Madam, *said I*, the Night has somewhat a more melancholy Air than the Day ; we fancy the Stars march more silently than the Sun, and our Thoughts wander with the more liberty, whilst we think all the World at rest but our selves : besides, the Day is more uniform, we see nothing but the Sun, and Light in the Firmament ; whilst the Night gives us variety of Objects, and shews us ten thousand Stars, which inspire us with as many pleasant Ideas. What you say is true, *said she* ; I love the Stars, there is somewhat charming in them, and I could almost be angry with the Sun for effacing 'em. - I can never pardon him, *I cry'd*, for keeping all those Worlds from my Sight. What Worlds, *said she*, looking earnestly upon me, what Worlds do you mean ?

I beg your pardon, Madam, *said I* ; you have put me upon my Folly, and I begin to rave. What Folly, *said she* ? I

B 3 discover

discover none. Alas, *said I*, I am a sham'd, I must own it, I have had a strong fancy every Star is a World. I will not swear it is true, but must think so, because it is so pleasant to believe it: 'tis a fancy come into my head, and is very diverting. If your Folly be so diverting, *said the Marchioness*, pray make me sensible of it; provided the pleasure be so great, I will believe of the Stars all you would have me. It is, *said I*, a Diversion, Madam, I fear you will not relish; 'tis not like reading one of *Moliere's* Plays: 'tis a Pleasure rather of the Fancy than of the Judgment. I hope, *reply'd she*, you do not think me incapable of it: teach me your Stars, I will shew you the contrary. No, no, *I reply'd*, it shall never be said I was talking Philosophy at ten of the clock at Night to the most amiable Creature in the World; find your Philosophers somewhere else.

But in vain I excus'd myself: who could resist such Charms? I was forc'd to yield, and yet knew not where to begin; for to a Person who understood nothing of Natural Philosophy, you
must

must go a great way about to prove that the Earth may be a Planet, the Planets so many Earths, and all the Stars Worlds : however, to give her a general Notion of Philosophy, I at last resolv'd on this Method. All Philosophy, *said I*, Madam, is founded upon two things, either that we are too short-sighted, or that we are too curious ; for if our Eyes were better than they are, we should soon see whether the Stars were Worlds or not ; and if on the other hand we were less curious, we should not care whether the Stars are Worlds or not ; which I think is much to the same purpose. But the Business is, we have a mind to know more than we see : And again, if we could discern well what we do see, it would be too much known to us : but we see things quite otherwise than they are. So that your true Philosopher will not believe what he does see, and is always conjecturing at what he does not, which is a Life I think not much to be envy'd. Upon this I fancy to myself, that Nature very much resembles an Opera ; where you stand, you do not see

the Stage as it really is ; but as it is plac'd with advantage, and all the Wheels and Movements are hid, to make the Representation the more agreeable : Nor do you trouble yourself how, or by what means the Machines are mov'd, tho' certainly an Engineer in the Pit is affected with what does not touch you ; he is pleas'd with the Motion, and is demonstrating to himself, on what it depends, and how it comes to pass. This Engineer then is like a Philosopher, tho' the Difficulty is greater on the Philosopher's part, the Machines of the Theatre being nothing so curious as those of Nature, who disposes her Wheels and Springs so out of sight, that we have been long a guessing at the Movement of the Universe. Suppose then the Sages to be at an Opera, *i. e.* *Pythagoras, Plato, Aristotle*, and all the Wise Men who have made such a noise in the World, for these many Ages ; we will suppose 'em at the Representation of *Phaeton*, where they see the aspiring Youth lifted up by the Winds, but do not discover the Wires by which he mounts, nor know they

they any thing of what is done behind the Scenes. Would you have all these Philosophers own themselves to be stark Fools, and confess ingenuously they know not how it comes to pass? No, no, they are not called Wise Men for nothing; tho', let me tell you, most of their Wisdom depends upon the Ignorance of their Neighbours. Every Man presently gives his Opinion, and how improbable soever, there are Fools enough of all sorts to believe 'em: One tells you *Phaeton* is drawn up by a hidden Magnettick Virtue, no matter where it lies; and perhaps the grave Gentleman will take Pet if you ask him the Question. Another says, *Phaeton* is compos'd of certain Numbers that make him mount; and after all, the Philosopher knows no more of those Numbers than a sucking Child does of *Algebra*. A third tells you, *Phaeton* hath a secret Love for the top of the Theatre; and, like a true Lover, cannot be at rest out of his Mistress's Company; with an hundred such extravagant Fancies, that a Man must conclude the old Sages were very good Banterers. But

now comes Monsieur *Descartes* with some of the Moderns; and they tell you *Phaeton* ascends, because a greater Weight than he descends; so that now we do not believe a Body can move unless it is push'd and forc'd by another Body, and as it were drawn by Cords, so that nothing can rise or fall but by means of a Counterpoise: to see Nature then as she really is, you must stand behind the Scenes at the Opera. I perceive, *said the Marchioness*, Philosophy is now become very mechanical. So mechanical, Madam, *said I*, that I fear we shall quickly be asham'd of it; they will have the World to be in great, what a Watch is in little, which is very regular, and depends only upon the just disposing of the several parts of the Movement. But pray tell me, Madam, had you not formerly a more sublime Idea of the Universe? Do not you think then that you honour'd it more than it deserv'd? for most Folks have the less esteem for it since they have pretended to know it. I am not of their opinion, *said she*; I value it the more since I know it resembles

a Watch; and the whole Order of Nature, the more plain and easy it is, to me it appears the more admirable.

I know not, *said I*, who has inspir'd you with these solid Notions; but I am certain there are few that have them besides yourself. People generally admire what they do not comprehend, they have a Veneration for Obscurity, and look upon Nature while they do not understand her, as a kind of Magic, and despise her below Legerdemain, when once they are acquainted with her: but I find you, Madam, so much better dispos'd, that I have nothing to do but to draw the Curtain, and shew you the World. That then which appears farthest from the Earth (where we reside) is called the Heavens, that azure Firmament, where the Stars are fasten'd like so many Nails, and are call'd fix'd, because they seem to have no other Motion than that of their Heaven, which carries them with itself from East to West. Between the Earth and this great Vault (as I may call it) hang

at different Heights, the *Sun*, and the *Moon*. with the five other Stars, *Mercury*, *Venus*, *Mars*, *Jupiter*, and *Saturn*, which we call the Planets: these Planets, not being fastned to the same Heaven, and having very unequal Motions, have divers Aspects and Positions; whereas the fixed Stars in respect to one another, are always in the same Situation: for example, the *Chariot*, which is compos'd of the seven Stars, has been, and ever will be, as it now is, tho' the Moon is sometimes nearer to the Sun, and sometimes farther from it; and so it is with the rest of the Planets. Thus things appear'd to the Old *Chaldean* Shepherds, whose great leisure produced these first Observations, which have since been the Foundation of Astronomy; which Science had its birth in *Chaldea*, as Geometry sprung from *Egypt*, where the Inundation of the *Nile* confounding the Bounds of their Fields, was the occasion of their inventing exacter Measures, to distinguish every one's Land from that of his Neighbour. So that Astro-

my

my was the Daughter of Idleness, Geometry the Daughter of Interest; and if we did but examine Poetry, we should certainly find her the Daughter of Love.

I am glad, said the Lady, I have learnt the Genealogy of the Sciences, and am convinc'd I must stick to Astronomy; my Soul is not mercenary enough for Geometry, nor is it tender enough for Poetry; but I have as much time to spare, as Astronomy requires: besides, we are now in the Country, and lead a kind of Pastoral Life, which suits best with Astronomy. Do not deceive yourself, Madam, *said I*, 'tis not a true Shepherd's Life to talk of the Stars and Planets: See if they pass their Time so in *Astræa*. That sort of Shepherd's Craft, *replied she*, is too dangerous for me to learn: I love the honest *Chaldeans*, and you must teach me their Rules, if you would have me improve in their Science. But let us proceed. When they had rank'd the Heavens in that manner you tell me, pray, what is the next Question? The next,

next, *said I*, is the disposing the several Parts of the Universe, which the Learned call *Making a System*: but before I expound the first System, I would have you observe, we are all naturally like that Madman at *Athens*, who fancy'd all the Ships were his that came into the *Pyæum* Port. Nor is our Folly less extravagant; we believe all things in Nature design'd for our Use; and do but ask a Philosopher, to what purpose there is that prodigious company of fixed Stars, when a far less Number would perform the Service they do us? he answers coldly, they were made to please our Sight. Upon this Principle, they imagined the Earth rested in the Centre of the Universe, while all the Celestial Bodies (which were made for it) took the pains to turn round to give Light to it. They plac'd the Moon above the Earth, *Mercury* above the Moon, after *Venus* the Sun, *Mars*, *Jupiter*, *Saturn*; above all these they set the Heaven of fixed Stars, the Earth was just in the middle of those Circles which contain

the

the Planets; and the greater the Circles were, they were the farther distant from the Earth, and by consequence the farthest Planets took up the most Time in finishing their Course, which in effect is true. But why, *said the Marchioness*, interrupting me, do you dislike this System? It seems to me very clear and intelligible. However, Madam, *said I*, I will make it plainer; for should I give it you as it came from *Ptolemy* its Author, or some other who have since studied it, I should fright you, I fancy, instead of diverting you. Since the Motions of the Planets are not so regular, but that sometimes they go faster, sometimes slower, sometimes are nearer the Earth, and sometimes farther from it; the Antients invented I know not how many Orbs or Circles involv'd one within another, which they thought would solve all Objections: This Confusion of Circles was so great, that at that time, when they knew no better, a certain King of *Castile*, a great Mathematician, but not much troubled with Religion, said,

That

That had God consulted him when he made the World, he would have told him how to have framed it better. The Saying was very atheistical, and no doubt the Instructions he would have given the Almighty, was the suppressing those Circles with which he had clogg'd the Celestial Motions, and the taking away two or three superfluous Heavens which were plac'd above the fixed Stars : for the Philosophers, to explain the Motion of the Celestial Bodies, had above the uppermost Heaven (which we see) found another of Crystal, to influence and give Motion to the inferior Heavens ; and where-ever they heard of another Motion, they presently clapp'd up a Crystal Heaven, which cost 'em nothing. But why must their Heaven be of Crystal, *said the Marchioness* ; would nothing else serve as well ? No, no, *replied I*, nothing so well ; for the Light was to come thro' them, and yet they were to be solid. *Aristotle* would have it so, he had found Solidity to be one of their Excellencies ; and when he had once said it, no body would be so
rude

rude as to question it. But it seems there were Comets much higher than the Philosophers expected; which, as they pass'd along, broke the Crystal Heavens, and confounded the Universe: But to make the best of a bad Market; they presently melted down their broken Glass, and to *Aristotle's* Confusion; made the Heavens fluid; and by the Observations of these latter Ages it is now out of doubt, that *Venus* and *Mercury* turn round the Sun, and not round the Earth, according to the antient System, which is now every where exploded, and all the *Ipsè dixits* not worth a Rush. But that which I am going to lay down, will solve all, and is so clear, that the King of *Castile* himself may spare his Advice. Methinks, *says the Marchioness*, your Philosophy is a kind of Outcry, where he that offers to do the Work cheapest, carries it from all the rest. 'Tis very true, *said I*, Nature is a great Housewife, she always makes use of what costs least, let the Difference be ever so inconsiderable: and yet this Frugality is accompanied with an extraordinary Magnificence, which

which shines thro' all her Works; that is, she is magnificent in the Design, but frugal in the Execution: and what can be more praise-worthy than a great Design accomplish'd with a little Expence? But in our Ideas we turn things topsy-turvy, we place our Thrift in the Design, and are at ten times more charge in Workmanship than it requires, which is very ridiculous. Imitate Nature then, *said she*, in your System, and give me as little Trouble as you can to comprehend you. Fear it not, Madam, *said I*, we have done with our Impertinences: Imagine then a *German* call'd *Copernicus* confounding every thing, tearing in pieces the beloved Circles of Antiquity, and shattering their Crystal Heavens like so many Glass-Windows; seiz'd with the noble Rage of Astronomy, he snatches up the Earth from the Centre of the Universe, sends her packing, and places the Sun in the Center, to which it did more justly belong; the Planets no longer turn round the Earth, nor inclose it in the Circles they describe: if they give us Light, it is but by chance, and

as they meet us in their way. All now turns round the Sun; even the Earth herself, and *Copernicus*, to punish the Earth for her former Laziness, makes her contribute all he can to the Motion of the Planets and Heavens; and now stripp'd of all the heavenly Equipage with which she was so gloriously attended, she has nothing left her but the *Moon*, which still turns round about her. Fair and softly, *says the Marchioness*, I fancy you yourself are seiz'd with the noble Fury of Astronomy; a little less Rapture, and I shall understand you the better. The Sun, you say, is in the Center of the Universe, and is immoveable; what follows next? It is *Mercury*, *said I*; he turns round the Sun, so that the Sun is the Centre of the Circle wherein *Mercury* moves; above *Mercury* is *Venus*, who turns also round the Sun: after comes the Earth, which being placed higher than *Mercury* and *Venus*, makes a greater Circle round the Sun than either of them; at last come *Mars*, *Jupiter*, and *Saturn*, in the same order I name 'em, so that *Saturn* has the greatest Circle round the Sun,

Sun, which is the reason he is longer in making his Revolution than any of the other Planets. You have forgot the Moon, *said the Marchioness*. We shall quickly find her again, *said I*; the Moon turns round the Earth, and does not leave her; but as the Earth advances in the Circle which she describes about the Sun; and if the Moon turns round the Sun, it is because she will not quit the Earth. I understand you, *said she*, and I love the Moon for staying with us when all the other Planets abandon us; nay, I fear your *German* would have willingly taken her away too if he could, for in all his Proceedings I find he had a great Spite to the Earth. 'Twas well done of him, *said I*, to abate the Vanity of Mankind, who had taken up the best place in the Universe, and it pleases me to see the Earth in the Crouds of the Planets. Sure, *said she*, you do not think their Vanity extends itself so far as Astronomy! Do you believe you have humbled me, in telling me the Earth goes round the Sun? For my part, I do not think myself at all the worse for it. I confess, *said I*, Ma-
dam,

dam, I believe a fair Lady would be much more concerned for her Place at a Ball, than for her Rank in the Universe: and the Precedence of two Planets will not make half such a Noise in the World as that of two Ambassadors. However, the same Inclination which reigns at a Ceremony, governs in a System; and if you love the uppermost Place in the one, the Philosopher desires the Centre in the other: he flatters himself that all things were made for him, and insensibly believes a matter of pure Speculation to be a point of Interest. This is a Calumny, *said she*, you have invented against Mankind; why did they receive this System, if it was so erroneous? I *humild* know not, *said I*, but I am sure *Copernicus* himself, distrusted the Success of his Opinion, he was a long time before he would venture to publish it, nor had he done it then without the Importunity of his Friends. But do you know what became of him? the very Day they brought him the first printed Sheet of his Book, he died: "he foresaw he should never be able to reconcile all the Con-
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traditions, and therefore very wisely
 slip out of the way. I would be just to
 all the World, *said the Marchioness*,
 but 'tis hard to fancy we move, and yet
 see we do not change our Place; we find
 ourselves in the Morning where we lay
 down at Night: Perhaps you will tell
 me the whole Earth moves. Yes, cer-
 tainly, *said I*, it is the same case as if
 you fell asleep in a Boat upon the River,
 when you awake you find yourself in
 the same Place and the same Situation in
 respect to all the Parts of the Boat. 'Tis
 true, *she reply'd*, but here's a great diffe-
 rence, when I awake, I find another
 Shore, and that shews me my Boat hath
 changed Place; but 'tis not the same with
 the Earth, I find all things as I left 'em.
 No, no, *said I*, there is another Shore too;
 you know that beyond the Circles of the
 Planets are fixed Stars, there is our Shore.
 I am upon the Earth, and the Earth makes
 a great Circle round the Sun, I look for
 the Centre of the Circle, and see the Sun
 there; then I direct my Sight beyond the
 Sun in a right Line, and should certainly
 discover the fixed Stars which answer to
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the Sun, but that the Light of the Sun effaces 'em: But at night I easily perceive the Stars which corresponded with him in the Day, which is exactly the same thing; if the Earth did not change its Place in the Circle where it is, I should see the Sun always against the same fixed Stars; but when the Earth does change its Place, the Sun must answer to other Stars; and there again is your Shore, which is always changing. And seeing the Earth makes her Circle in a Year, I see the Sun likewise in the space of a Year answer successively to the whole Circle of the fixed Stars, which Circle is called the *Zodiack*; I will draw you the Figure of it, if you please, on the Sand. 'Tis no matter, *said she*, I can do well enough without it; besides, it will give an Air of Learning to my Park, which I would not have in it: For I have heard of a certain Philosopher, who being shipwreck'd and cast upon an unknown Island, seeing several Mathematical Figures traced on the Sea-shore, cry'd out to those that followed him, Courage, my Companions, the Isle is inhabited; behold

hold the Footsteps of Men: But you may spare your Figures; such Footsteps are not decent here.

I confess, Madam, *said I*, the Footsteps of Lovers would better become this Place; that is, your Name and Cypher carv'd on the Trees by your Adorers. Tell not me, *said she*, of Lovers and Adorers; I am for my beloved Sun and Planets. But how comes it to pass that the Sun, as to the fixed Stars, compleats his Course but in a Year, and yet goes over our Heads every day? Did you never, *reply'd I*, observe a Bowl on the Green? It runs towards the Jack, and at the same time turns very often round itself, so that the Parts which were above are below, and those which were below are above; just so it is with the Earth, at the same time that she advances on the Circle, which in a Year's space she makes round the Sun, in 24 Hours she turns round herself; so that in 24 Hours every Part of the Earth loses the Sun, and recovers him again, and as it turns towards the Sun, it seems to rise: and as it turns from
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him, it seems to fall. It is very pleasant, *said she*, that the Earth must take all upon herself, and the Sun do nothing. And when the Moon, the other Planets and the fixed Stars seem to go over our Heads every 24 Hours, you'll say that too is only Fancy? Mere Fancy, *said I*, which proceeds from the same Cause; for the Planets compleat their Courses round the Sun at unequal times, according to their unequal Distances; and that which we see to-day, answers to a certain Point in the *Zodiack*, or Circle of the fixed Stars, we see to-morrow answer to another Point, because it is advanced on its own Circle, as well as we are advanced upon ours. We move, and the Planets move too, which must make a great Alteration; so that what seems irregular in the Planets, proceeds only from our Motion, when in truth, they are all very regular. I will suppose 'em so, *said the Marchioness*; but I would not have their Regularity put the Earth to so great trouble: methinks you exact too much Activity from so ponderous a Mass. But, *said I*, had you rather

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ther that the Sun and all the Stars, which are vast great Bodies, should in 24 Hours travel such an Infinity of Miles, and make so prodigious a *Tour* as they needs must, if the Earth did not turn round itself every 24 Hours? Oh, *said she*, the Sun and the Stars are all Fire, their Motion is not very difficult; but the Earth, I fancy, is a little unwieldy. That signifies nothing, *I replied*; for what do you think of a First-Rate Ship, which carries near a hundred and fifty Guns, and above 3000 Men, besides great Loads of Merchandize? yet you see one Puff of Wind sets her a sailing, because the Water is liquid, and being easily separated, very little resists the Motion of the Ship. So the Earth, though never so weighty, is as easily borne up by the Celestial Matter, which is a thousand times more fluid than the Water, and fills all that great Space where the Planets float; for where would you have the Earth fastned to resist the Motion of the Celestial Matter, and not be driven by it? You may as well fancy a little Block of Wood
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can withstand the Current of a River. But pray, *said she*, how can the Earth with all its Weight, be borne up by your Celestial Matter, which must be very light, because it is so fluid? It does not argue, *said I*, that what is most fluid is most light: for what think you of the great Ship I mentioned just now, which with all its Burden is yet lighter than the Water it floats on? I will have nothing to do with that great Ship, *said she*, with some warmth; and I begin to apprehend myself in some danger on such a Whirlygig as you have made of the Earth. There is no danger, *replied I*; but, Madam, if you are afraid, we will have the Earth supported by four Elephants, as the *Indians* believe it. Hey-day, *cry'd she*, here's another System; however, I love those People for taking care of themselves; they have a good Foundation to trust to, while you *Copernicans* are a little too venturous with the Celestial Matter: and yet I fancy, if the *Indians* thought the Earth in the least danger of sinking, they would double
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their number of Elephants. They would do well, *said I*, laughing at her Fancy, who would sleep in fear? and if you have occasion for 'em to-night, we will put as many as you please in our System; we can take 'em away again by degrees, as you grow better confirm'd. I do not think 'em very necessary, *said she*; I have Courage enough to turn. You shall turn with pleasure, Madam, *said I*, and shall find delightful Ideas in this System: For example, sometimes I fancy my self suspended in the Air, without any Motion, while the Earth turns round me in 24 Hours; I see I know not how many different Faces pass under me, some white, some black, and some tauny; sometimes I see Hats, and sometimes Turbants; now Heads with Hair, and then shav'd Heads; here I see Cities with Steeples, others with Spires and Crescents, others with Towers of Porcelain, and anon great Countreys with nothing but Cottages: here I see vast Oceans, and there most horrible Deserts: In short, I discover
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the infinite Variety which is upon the Surface of the Earth. I confess, *said she*, 24 Hours would thus be very well bestow'd, so we were in the same Place where we are now: I do not mean in the Park; but we will suppose ourselves in the Air, other People continually passing by, who take up our Place, and at the end of 24 Hours we return to it again.

Copernicus himself, *said I*, could not have comprehended it better: First then, we see some of our Neighbours passing by us, up to the cars in Politicks, yet settling their Nation no better than we do the World in the Moon; then follows a great Sea, perhaps a Fleet of Ships, perhaps a Mackrel-Boat, no matter whether; then come some of the *Iroquois* going to eat a Prisoner for their Breakfast, who seems as little concern'd as his Devourers; after, appear the Women of the Land of *Jesso*, who spend all their time in dressing their Husbands Dinners and Suppers, and painting their Lips and Eyebrows blue, only to please the greatest Brutes in the

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World;

World; then the fair *Circassians*, who are very free of their Favours, and grant all to the first Comer, except a little they reserve for their Husbands; then the *Tartars* going to steal Concubines for the *Turks* and *Persians*; and at last our own dear Countrymen, it may be in some Points as ridiculous as the best of 'em. It is very pleasant, *said the Marchioness*, but to imagine what you tell me: tho' if I were above, and saw all this, I would have the liberty to hasten or retard the Motion of the Earth, according as the Objects pleas'd me more or less; and I assure you I should quickly send packing the *Politicians* and *Man eaters*, but should have a great Curiosity for the fair *Circassians*, for methinks they have a Custom very particular. But I have a Difficulty to clear, and you must be serious. As the Earth moves, the Air changes every Moment, so we breathe the Air of another Country. Not at all, *reply'd I*; for the Air which encompasses the Earth, does not extend above a certain Height, perhaps 20 Leagues; it follows

lows us, and turns with us. Have you not seen the Work of a Silk-Worm, the Shells in which those little Animals imprison themselves, and weave with so much Art? they are made of a Silk very close, but are cover'd with a Down very slack and soft: So the Earth, which is solid, is cover'd from the Surface 20 Leagues upwards with a kind of Down, which is the Air, and like the Shell of the Silk-Worm turns at the same time. Beyond the Air is the Celestial Matter, incomparably more pure and subtle, and much more agitated than the Air. Your Comparison, *said she*, is somewhat mean, and yet what Wonders are wrought, what Wars, what Changes in this little Shell? 'Tis true, *I replied*; but Nature takes no notice of such little particular Motions, but drives us along with the general Motion, as if she were at Bowls. Methinks, *said she*, 'tis very ridiculous to be upon a thing that turns, and yet not be well assur'd that it does turn; and to tell you the truth, I begin to distrust the Reasons you give why we should not be sensible of the Motion of

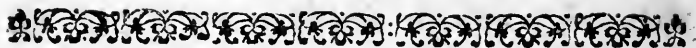
the Earth ; for is it possible there should not some little Mark be left, by which we might perceive it ?

All Motions, *said I*, the more common and natural they are, are the less perceptible ; and this holds true even in Morality. The Motion of Self-love is so natural to us, that for the most part we are not sensible of it, and we believe we act by other Principles. You are Moralizing, *said she*, to a Question of Natural Philosophy : But 'tis enough for the first time ; let us now go home, and meet here again to-morrow, you with your Systems, and I with my Ignorance.

In returning back to the Castle, that I might say all I could on the Subject, I told her of a third System, invented by *Tycho Brahe*, who had fix'd the Earth in the Centre of the World, turn'd the Sun round the Earth, and the rest of the Planets round the Sun ; for since the new Discoveries, there was no way left to have the Planets turn round the Earth. But the Marchioness, who had a quick Apprehension, said, she thought it wa
too

too affected, among so many great Bodies, to exempt the Earth only from turning round the Sun; that it was improper to make the Sun turn round the Earth, when all the Planets turn round the Sun: and that tho' this System was to prove the Immobility of the Earth, yet she thought it very improbable. So we resolv'd to stick to *Copernicus*, whose Opinion we thought most uniform, probable and diverting. In short, the Simplicity of his System convinces us, and the Boldness of it surprizes with Pleasure.





The Second Evening.

*That the Moon is an Habitable
World.*

NEXT Morning I sent to the Marchioness's Apartment, to know how she had rested, and whether the Motion of the Earth had not disturbed her? She sent word back, she began to be accustomed to it, and that she had slept as well or better than *Copernicus* himself. Soon after, there came some Neighbours to dinner, who, according to the tiresome rural Custom, staid till Evening, and were very obliging in going then; for the Country also gives a Privilege of extending their Visit to the next Morning, if they are so disposed: when they were gone, we walk'd again into the Park, and immediately fell upon our Systems. She so well conceiv'd what I told her the Night before, that she desired

fired I would proceed without any Repetition. Well, Madam, *said I*, since the Sun, which is now immoveable, has left off being a Planet, and the Earth which turns round him, is now become one, you will not be surpriz'd when you hear that the Moon is an Earth too, and that she is inhabited as ours is. I confess, *said she*, I have often heard talk of the World in the Moon, but I always look'd upon it as visionary, and mere Fancy. And it may be so still, *said I*; I am in this case as People in a Civil War, where the uncertainty of what may happen makes 'em hold intelligence with the opposite Party, and correspond with their very Enemies: for tho' I verily believe the Moon is inhabited, I live civilly with those who do not believe it; and I am (like some honest Gentlemen in point of Religion) still ready to embrace the prevailing Opinion: but 'till the Unbelievers have a more considerable Advantage, I am for the People in the Moon.

Suppose there had never been any Communication between *Paris* and *St. Dennis*,

Dennis, and a Cockney who was never beyond the Walls of this City, saw *St. Dennis* from the Towers of *Notre-Dame*, you ask him if he believes *St. Dennis* is inhabited as *Paris* is? He presently answers, No: for, *says he*, I see People at *Paris*, but none at *St. Dennis*, nor did I ever hear of any there. 'Tis true, you tell him, that from the Towers of *Notre-Dame* he cannot perceive any Inhabitants at *St. Dennis*, because of the Distance; but all that he does discover of *St. Dennis*, very much resembles what he sees at *Paris*, the Steeples, Houses, Walls, &c. so that it may very well be inhabited as *Paris* is: all this signifies nothing, my Cockney still persists, that *St. Dennis* is not inhabited, because he sees no body there. The Moon is our *St. Dennis*, and every one of us as mere Cockneys as he that never was out of his own City. You are too severe, *said she*, upon your Fellow-Citizens; we are not all sure so silly as your Cockney; since *St. Dennis* is just as *Paris* is, he is a Fool, if he does not think it inhabited: But the Moon

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is not at all like the Earth. Have a care what you say, *reply'd I*; for if the Moon resembles the Earth, you are under a necessity to believe it inhabited. If it be so, *said she*, I own I cannot be dispens'd from believing it; and you seem so confident of it, that I fear, I must, whether I will or no. 'Tis true, the two Motions of the Earth, (which I could never imagine till now) do a little stagger me as to all the rest: But yet how is it possible the Earth should enlighten as the Moon does, without which they cannot be alike? If that be all, *said I*, the Difference is not great, for 'tis the Sun which is the sole Fountain of Light: that Quality proceeds only from him; and if the Planets give Light to us, it is because they first receive it from the Sun: the Sun sends Light to the Moon, and she reflects it back on the Earth: the Earth in the same manner receives Light from the Sun, and sends it to the Moon; for the Distance is the same between the Earth and the Moon, as between the Moon and the Earth. But is the Earth, *said the Marchioness*,

chioness, as fit to send back the Light of the Sun, as the Moon is? You are altogether for the Moon, *said I*, she is much oblig'd to you; but you must know that Light is made up of certain little Balls, which rebound from what is solid, but pass thro' what admits of an entrance in a right Line, as Air or Glas; so that what makes the Moon enlighten us, is, that she is a firm and solid Body, from which the little Balls rebound: and we must deny our Senses, if we will not allow the Earth the same Solidity. In short, the Difference is how we are seated; for the Moon being at so vast a distance from us, we can only discover her to be a Body of Light, and do not perceive that she is a great Mass, altogether like the Earth: whereas, on the contrary, because we are so near the Earth, we know her to be a great Mass, proper to furnish Provision for Animals, but do not discover her to be a Body of Light, for want of the due distance. It is just so with us all, *said the Lady*; we are dazzled with the Quality and Fortune of those who are above us; when, do
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but look to the bottom, and we are all alike.

Very true, *said I*, we would judge of all things, but still stand in the wrong place: we are too near to judge of ourselves, and too far off to know others. So that the true way to see things as they are, is to be between the Moon and the Earth, to be purely a Spectator of this World, and not an Inhabitant. I shall never be satisfy'd, *said she*, for the Injustice we do the Earth, and the too favourable Opinion we have of the Moon, 'till you assure me that the People in the Moon are as little acquainted with their Advantages as we are with ours, and that they take our Earth for a Planet, without knowing theirs is one too. Do not doubt it, *said I*; we appear to them to perform very regularly our Function of a Planet. 'Tis true, they do not see us make a Circle round them, but that is no great matter. That half of the Moon which was turn'd towards us at the beginning of the World, hath been turn'd towards us ever since; and those Spots in her, which

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we have thought to look like a Face, with Eyes, Nose, and Mouth, are still the same; and if the other opposite half should appear to us, we should no doubt fancy another Figure from the different Spots that are in it: Not but that the Moon turns upon herself, and in the same time that she turns round the Earth, that is, in a Month; but while she is making that turn upon herself, and that she would hide a Check, for example, and appear somewhat else to us, she makes a like part of her Circle round the Earth, and still presents to us the same Check: so that the Moon, who in respect of the Sun and Stars, turns round herself, in respect of us, does not turn at all: they seem to her to rise and set in the space of fifteen Days; but for our Earth, it appears to her to be held up in the same place of the Heavens. 'Tis true, this apparent Immobility is not very agreeable for a Body which should pass for a Planet, but it is not altogether perfect; the Moon has a kind of trembling, which causes a little Corner of her Face to be sometimes hid

hid from us, and a little Corner of the opposite half appears; but then, upon my word, she attributes that trembling to us, and fancies that we have in the Heavens the Motion of a *Pendulum*, which vibrates to and fro.

I find, *says the Marchioness*, the Planets are just like us; we cast that upon others which is in ourselves; the Earth says, *'Tis not I that turn, 'tis the Sun*; the Moon says, *'Tis not I that shake, 'tis the Earth*; the World is full of Error. But I would not advise you, *said I*, to undertake the reforming it; you had better convince yourself of the entire Resemblance of the Earth and the Moon. Imagine then these two great Bowls suspended in the Heavens, you know that the Sun always enlightens the one half of a Body that is round, and the other half is in the Shadow: there is then one half of the Earth, and one half of the Moon, which is enlightned by the Sun; that is, one half which is Day, and the other half which is Night. Observe also, that as a Ball has less
Force

Force after it has been struck against a Wall, and rebounds to the other side; so Light is weakned when it is reflected. The pale Light which comes to us from the Moon, is the very Light of the Sun; but it cannot come to us from the Moon but by Reflexion: it has lost much of the Force and Lustre it had when it came directly from the Sun upon the Moon; and that bright Light which shines directly upon us from the Sun, and which the Earth reflects upon the Moon, is as pale and weak when it arrives there: So that the Light which appears to us in the Moon, and which enlightens our Nights, is the Part of the Moon which has Day; and that Part of the Earth which has Day, when it is opposite to the Part of the Moon which has Night, gives Light to it. All depends upon this, how the Moon and the Earth behold one another. At the beginning of the Month, we do not see the Moon, because she is between the Sun and us; that half of her which has Day, is then turned toward the Sun; and that half which has Night,

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is turned towards us; we cannot see it then, because it has no Light upon it: but that half of the Moon which has Night; being turned to the half of the Earth which has Day, sees us without being perceiv'd; and we then appear to them just as the Full-Moon does to us. So that, as I may say, the People of the Moon have then a full Earth; but the Moon being advanc'd upon her Circle of a Month, comes from under the Sun, and begins to turn towards us a little corner of the half which is Light; which is the Crescent: then those Parts of the Moon which have Night, do not see all that half of the Earth which has Day, and we are then in the Wain to them.

I comprehend you very well, *said the Lady*; the People in the Moon have a Month quite contrary to us; when we have a full Moon, their half of the Moon which is light, is turned to our half of the Earth which is dark; they do not see us at all; and they have then a new Earth; this is plain. But now tell me how come the Eclipses? You may easily
guess

guess that, *said I*; when it is new Moon, she is between the Sun and us, and all her dark half is turned towards us who have Light, that obscure Shadow is cast upon us; if the Moon be directly under the Sun, that Shadow hides him from us, and at the same time obscures a part of that half of the Earth which is light; this is seen by that half of the Moon which is dark: here then is an Eclipse of the Sun to us during our Day, and an Eclipse of the Earth to the Moon during her Night. When it is full Moon the Earth is between her and the Sun, and all the dark half of the Earth is turned towards all the light half of the Moon; the Shadow then of the Earth casts itself towards the Moon, and if it falls on the Moon, it obscures that light half which we see, which has then Day, and hinders the Sun from shining on it. Here then is an Eclipse of the Moon to us during our Night, and an Eclipse of the Sun to the Moon during her Day: but the reason that we have not Eclipses every time that the Moon is between the Sun and the Earth,

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or the Earth between the Sun and the Moon, is, because these three Bodies are not exactly placed in a right Line; and by consequence that which should make the Eclipse, casts its Shadow a little beside that which should be obscured.

I am surprized, *said the Marchioness*, that there should be so little Mystery in Eclipses, and that the whole World should not know the Cause of 'em. They never will, *said I*, as some People go about it. In the *East-Indies*, when the Sun and the Moon are in Eclipse, they believe a certain Devil who has black Claws, is seizing on those Planets with his Talons; and during that time the Rivers are covered with the Heads of *Indians*, who are up to the Neck in Water, because they esteem it a very devout Posture, to implore the Sun and the Moon to defend them against the Devil. In *America*, they are persuaded that the Sun and the Moon, when eclipsed, are angry, and what is it they will not do to be reconciled with them? The *Greeks*, who were so refined, did they not believe the

the Moon was enchanted, and that the Magicians forced her to descend from Heaven, and shed a dangerous Juice on the Plants? Nay, what a Panic were we in, not many Years ago, at an Eclipse of the Sun? How many People hid themselves in their Cellars; and all the Philosophers could not persuade them to come out 'till the Eclipse was over?

Methinks, *said she*, 'tis scandalous for Men to be such Cowards; there ought to be a general Law made to prohibit the discoursing of Eclipses, that we might not call to mind the Follies that have been said and done upon that Subject. Your Law then, *said I*, must abolish even the Memory of all things, and forbid us to speak at all, for I know nothing in the World which is not a Monument of the Folly of Man.

But what do you think, *said she*, of the People in the Moon; are they as fearful of an Eclipse as we are? It would be a good Jest to see the *Indians* there up to the Neck in Water; that the *Americans* should believe the Earth

angry

angry with them; the *Greeks* fancy we were bewitched, and would destroy their Plants; in short, that we should cause the same Consternation among them, as they do here. And why not, *said I*? I do not doubt it at all; for why should the People of the Moon have more Wit than we? What Right have they to affright us, and not we them? For my part, I believe that since a prodigious Company of Men have been, and still are such Fools to adore the Moon, there certainly are People in the Moon that worship the Earth, and that we are upon our Knees the one to the other. But sure, *said she*, we don't pretend to send any Influences to the Moon, and to give a Crisis to her Sick; if the People have any Wit in those Parts, they will soon destroy the Honour we flatter ourselves with, and I fear we shall have the Disadvantage.

Fear it not, Madam, *said I*; do you think we are the only Fools of the Universe? Is it not common for Ignorance to spread itself every where? 'Tis true, we can only guess at the Folly of the People

People in the Moon, but I no more doubt it, than I do the most authentick News that comes from thence. What News comes from thence, *said she*? That which the Learned bring us, *I replied*, who travel thither every Day with their Tubes and Telescopes: they will tell you of their Discoveries there, of Lands, Seas, Lakes, high Mountains, and deep Abyffes.

I fancy indeed, *said she*, they may discover Mountains and Abyffes, because of the remarkable Inequality; but how do they distinguish Lands and Seas? Very easily, *said I*; for the Waters letting part of the Light pass thro' them, send back but a very little, so that they appear afar off like so many dark Spots; whereas the Lands being solid, reflect the whole Light, and appear to be more bright and shining. The illustrious Monsieur *Cassini*, a most compleat Astronomer, has discovered something in the Moon which divided, then re-united, and sunk in a kind of Well: we may very probably suppose this was a River. Nay, they pretend to be so well

well acquainted with the several Places, that they have given them all Names: one they call *Copernicus*, another *Archimedes*, another *Galilaus*: there is the *Caspian Sea*, the *Black Lake*, the *Porphyrite Mountains*: in short, they have publish'd such exact Descriptions of the Moon, that a very Almanack-maker will be no more to seek there, than I am in *Paris*.

I must own then, *said the Marchioness*, they are very exact; but what do they say to the Inside of the Country? I would very fain know that. 'Tis impossible, *I replied*; the most learned Astronomers of our Age cannot inform you. You must ask that of *Astolfo*, who was carried into the Moon by *St. John*. I am going to tell you one of the agreeable Follies of *Ariosto*, and I am confident you will be well pleased to hear it: I must confess he had better have let alone *St. John*, whose Name is so worthy of Respect; but 'tis a poetical Licence, and must be allowed. The Poem is called *ORLANDO FURIOSO*, is dedicated to a Cardinal, and a great

D Pope

Pope has honoured it with his Approbation, which is prefix'd to several of the Editions. This is the Argument; Orlando, Nephew to Charlemain, runs mad because the fair Anglica prefers Medore before him. Astolfo, a Knight-Errant, finding himself one day in the terrestrial Paradise, which was upon the top of a very high Mountain, where he was carried by his flying Horse, meets St. John, who tells him, if he would have Orlando cured, he must make a Voyage with him into the Moon. Astolfo, who had a great mind to see new Countries, did not stand much for entreaty; and immediately there came a fiery Chariot, which carried the Apostle and the Knight up into the Air. Astolfo being no great Philosopher, was surprized to find the Moon so much bigger than it appeared to him when he was upon the Earth; to see Rivers, Seas, Mountains, Cities, Forests, nay, what would have surprized me too, Nymphs hunting in those Forests: but that which was most remarkable, was a Valley where you might find any thing that

that was lost in our World, of what nature soever; Crowns, Riches, Fame, and an Infinity of Hopes; the Time we spend in Play, and in searching for the Philosopher's-Stone; the Alms we give after our Death, the Verses we present to great Men and Princes, and the Sighs of Lovers. I know not, said the Marchioness, what became of the Sighs of Lovers in *Ariosto's* time, but I fancy there are very few of them ascend to the Moon in our days. Ah, Madam, replied I, how many does your Ladyship send thither every day? Those that are addressed to you, will make a considerable Heap; and I assure you the Moon keeps all safe that is lost here below. Yet I must tell you, *Ariosto* does but whisper it, though every thing is there, even the Donation of *Constantine*, (the Popes having pretended to be Masters of *Rome* and *Italy* by virtue of a Donation which the Emperor *Constantine* made *Sylvester*; and the truth is, nobody knows what is become of it.) But what do you think is not to be found in the Moon? Folly; all that

ever was upon the Earth is kept there still; but in lieu of it, it is not to be imagin'd how many Wits (if I may so call them) that are lost here, are got up into the Moon; they are so many Vials full of a very subtile Liquor, which evaporates immediately, if it be not well stopp'd; and upon every one of these Vials the Names are written to whom the Wits belong; I think *Ariosto* has heap'd 'em upon one another a little confusedly; but for order sake, we will fancy 'em plac'd upon Shelves in a long Gallery. *Astolfo* wonder'd to see several Vials full, inscribed with the Names of Persons whom he thought considerable for their Wisdom. To confess the truth, I begin to fear, since I have entertained you with these Philosophical and Poetical Visions, mine there is not very empty: however, 'tis some Consolation to me, that while you are so attentive, you have a little Glass full, as well as your humble Servant. The good Knight found his own Wits among the rest, and with the Apostle's leave snuff'd it all up his Nose,

like

like so much *Hungary-Water*; but *Ariosto* said, he did not carry it far, it returned again to the Moon a little after.

* ——— *The Love of one fair Northern Lass,
Sent back his Wit unto the Place it was.*

Well, he did not forget *Orlando's Vial*, which was the occasion of his Voyage; but he was cursedly plagued to carry it, for *Heroes Wits* are naturally very heavy, and there did not want one Drop of it. To conclude, *Ariosto*, according to his laudable Custom, addresses himself to his Mistress in the following beautiful Verses:

*Fair Mistress, who for me to Heaven shall fly,
To bring again from thence my wandering Wit?
Which I still lose, since from that piercing Eye,
The Dart came forth that first my Heart did
Nor of my loss at all complain would I, (bit:
Might I but keep that which remaineth yet:
But if it still decrease, within short space,
I doubt I shall be in Orlando's Case.*

* *Sir J. Harrington's Translation of Orlando Furioso,*
lib. 36.

*Yet, well I wot where to recover mine,
 Tho' not in Paradise, nor Cynthia's Sphere,
 Yet doubtless in a Place no less divine,
 In that sweet Face of yours, in that fair Hair,
 That ruby Lip, in those two starlike Eyes,
 There is my Wit, I know it wanders there;
 And with my Lips, if you would give me leave,
 I there would search, I thence would it receive.*

Is not this very merry? To reason like *Ariosto*, the safest way of losing our Wits is to be in love; for you see they do not go far from us, we may recover 'em again at our Lips; but when we lose 'em by other means, as for example, by philosophizing, whip they are gone into the Moon, and there is no coming at 'em again when we would. However, *said the Marchioness*, our Vials have an honourable Station among the Philosophers, when 'tis forty to one but Love fixeth our Wits on an Object we cannot but be ashamed of. But to take away mine entirely, pray tell me, but tell me seriously, if you believe there are any Men in the Moon; for methinks hi-
ther to

therto you have not been very positive. For my part, *said I*, I do not believe there are Men in the Moon: for do but observe how much the Face of Nature is changed between this and *China*; other Visages, Shapes, Manners, nay, almost other Principles of Reason; and therefore between us and the Moon, the Alteration must be much more considerable. In the Lands that have been lately discovered, we can scarce call the Inhabitants Men; they are rather Animals of human Shape, and that too sometimes very imperfect, almost without human Reason: he therefore who will travel to the Moon, must not expect to find Men there.

What sort of People are they then, *said she*. Troth, Madam, *said I*, I know not; for put the case that we ourselves inhabited the Moon, and were not Men, but rational Creatures, could we imagine, do you think, such fantastical People upon the Earth as Mankind is? Is it possible we should have an Idea of so strange a Composition, a Creature of such foolish Passions, and

such wise Reflections; allotted so small a Span of Life, and yet pursuing Views of such extent; so learned in Trifles, and so stupidly ignorant in Matters of the greatest importance; so much concerned for Liberty, and yet such great Inclinations to Servitude; so desirous of Happiness, and yet so very incapable of attaining it? The People in the Moon must be wise indeed to suppose all this of us. But do we not see ourselves continually, and cannot so much as guess how we were made? So that we are forc'd to say the Gods, when they created us, were drunk with Nectar, and when they were sober again, could not chuse but laugh at their own handy-work. Well, well, *said the Marchioness*, we are safe enough then, they in the Moon know nothing of us; but I could wish we were a little better acquainted with them; for it troubles me that we should see the Moon above us, and yet not know what is done there. Why, *said I*, are you not as much concerned for that part of the Earth which is not yet discovered? What Creatures inhabit

bit it, and what they do there? for we and they are carried in the same Vessel: they possess the Prow, and we the Poop, and yet there is no manner of Communication between us; they do not know at one End of the Ship, who lives, or what is done at the other, and you would know what passes in the Moon, which is another great Vessel sailing in the Heavens, at a vast distance from us.

Oh, *said she*, as for the Earth, I reckon it all as good as discovered, and can guess at the People, tho' I never heard a word of 'em; for certainly they all resemble us very much, and we may know 'em better whenever we will, let them stay where they are, 'tis only going to see 'em; but we cannot get into the Moon if we would; so that I despair of knowing what they do there. You would laugh at me, *said I*, if I should answer you seriously; perhaps I may deserve it; and yet, I fancy, I can say a great deal to justify a ridiculous Thought that is just now come into my head: nay, to use the Fool's

best Argument, I'll lay a Wager I make you own (in spite of Reason) that one of these days there may be a Communication between the Earth and the Moon, and who knows what great Advantages we may procure by it? Do but consider *America*, before it was discovered by *Columbus*, how profoundly ignorant were those People? they knew nothing at all of Arts and Sciences; they went naked, had no other Arms but a Bow and Arrows, and did not conceive they might be carried by Animals: they look'd upon the Sea as a wide Space, not for the Use of Man, but thought it was join'd to the Heavens, and that beyond it was nothing. 'Tis true, after having spent whole years in making hollow the Trunks of great Trees with sharp Stones, they put themselves to Sea in these Trunks, and floated from Land to Land, as the Wind and Waves drove them: But how often was their Trough overfet, and they forced to recover it again by swimming? So that (except when they were on the Land) it might be said they were

con-

continually swimming: and yet had any one but told 'em of another kind of Navigation, incomparably more perfect and useful than their own; that they might easily pass over that infinite Space of Water; that they might stop in the middle of the Waves, and in some sense command the Winds, and make their Vessel go fast or slow, as they pleas'd: in short, that this unpassable Ocean should be no Obstacle to their conversing with another different People; do you think they would have believed you? And yet at last that day is come: the unheard-of and most surprizing Sight appears, vast great Bodies, with white Wings, are seen to fly upon the Sea, to vomit Fire from all Parts, and to cast on their Shores an unknown People, all scaled with Iron, who dispose and govern Monsters as they please, carry Thunder in their hands, and destroy whoever resists them. From whence came they? Who brought them over the Sea? Who gave to them the disposal of the Fire of Heaven? Are they

Gods? Are they the Offspring of the Sun? for certainly they are not Men. Do but consider, Madam, the Surprize of the *Americans*; there can be nothing greater: and after this, shall any one say, there shall never be a Communication between the Moon and the Earth? Did the *Americans* believe there would ever be any between them and *Europe*, 'till they saw it? 'Tis true, you must pass this great Space of Air and Heaven, which is between the Earth and the Moon; but did not those vast Seas seem at first as impassable to the *Americans*? You rave, I think, *said she*. Who denies it, Madam, *says I*? Nay, but I will prove it, *says she*; I do not care for your bare owning it: Did you not own the *Americans* were so ignorant, that they had not the least Conception of crossing the Sea? but we who know a great deal more than they, can imagine and fancy the going through the Air, tho' we are assured it is not to be done. There is somewhat more in it than Fancy, *I replied*, when it has been already practis'd; for
several

several have found the Secret of fastening Wings, which bear them up in the Air, to move them as they please, and to fly over Rivers, and from Steeple to Steeple. I cannot say, indeed, they have yet made an Eagle's Flight, or that it does not cost now and then a Leg or an Arm to one of these new Birds; but this may serve to represent the first Planks that were launch'd on the Water, and which were the very beginning of Navigation. There were no Vessels then thought of to sail round the World in; and yet you see what great Ships are grown by little and little from those first Planks. The Art of Flying is but newly invented; it will improve by degrees, and in time grow perfect, then we may fly as far as the Moon. We do not yet pretend to have discover'd all things, or that what we have discover'd can receive no Addition; and therefore, pray let us agree there are yet many things to be done in the Ages to come. Were you to live a thousand Years, *said the Marchioness*, I can never believe you will fly, but

but you must endanger your Neck. I will not, *replied I*, be so unmannerly as to contradict a fair Lady; but tho' we cannot learn the Art here, I hope you will allow they may fly better in the Moon: 'tis no great matter whether we go to them, or they come to us; we shall then be like the *Americans* who knew nothing of Navigation, and yet there were very good Ships at t'other end of the World. Were it so, *said she*, the People in the Moon would have been here before now. All in good time, *said I*; the *Europeans* were not in *America*, till at the end of some thousands of Years; so long were they in improving Navigation to the point of crossing the Ocean. The People in the Moon have already made some short Voyages in the Air; they are exercising continually, and by degrees will be more expert; and when we see 'em, God knows how we shall be surpriz'd. It is unsufferable, *said she*, you should banter me at this rate, and justify your ridiculous Fancy by such false Reasoning.

Reasoning. I am going to demonstrate, *said I*, that you reproach me very unjustly. Consider, Madam, that the World is unfolded by degrees; for the Antients were very positive, that the Torrid and Frigid Zones were not inhabitable, by reason of their excessive Heat and Cold: and in the time of the *Romans* the general Map of the World was but very little extended beyond that of their own Empire; which, tho' in one sense, express'd much Grandeur, in another sense, was a Sign of as great Ignorance: however, there were Men found both in very hot and in very cold Countries; so that you see the World is already increas'd. After that, it was thought that the Ocean cover'd the whole Earth, except what was then discover'd; there was no talk then of the Antipodes, not so much as a thought of 'em; for who could fancy their Heels at top, and their Heads at bottom? and yet after all their fine Reasoning, the Antipodes were discover'd. Here's now another half of the World starts up, and a new Reformation,

tion of the Map: Methinks this, Madam, should restrain us, and teach us not to be so positive in our Opinions; the World will unfold itself more to us hereafter; then we shall know the People in the Moon as well as we do now the Antipodes. But all things must be done in order; the whole Earth must be first discover'd; and 'till we are perfectly acquainted with our own Habitation, we shall never know that of our Neighbours. Without fooling, *said the Marchioness, looking earnestly upon me,* you are so very profound in this Point, that I begin to think you are in earnest, and believe what you say. Not so neither, *said I;* but I would shew you how easy it is to maintain a chimerical Notion, that may perplex a Man of Understanding, but never convince him: there is not any Argument so persuasive as Truth, which has no need to exert all its Proofs, but enters naturally into our Understanding; and when once we have learn'd it, we do nothing but think of it. I thank you then, *said she,* for imposing on me no longer;

longer; for I confess your false Reasoning disturb'd me, but now I shall sleep very quietly, if you think fit to go home.





The Third Evening.

Particulars of the World in the Moon, and Proofs of the other Planets being habitable.

THE Marchioness was so intent upon her Notions, that she would fain have engag'd me next day, to go on where I left off; but I told her, since the Moon and Stars were become the Subject of our Discourse, we should trust our Chimæra's with no body else. At Night we went again into the Park, which was now wholly dedicated to our learned Conversation.

Well, Madam, *said I*, I have great News for you; that which I told you last Night of the Moon's being inhabited, may not be otherwise now. There is a new Fancy got into my Head, which puts those People in great danger. I cannot suffer this, *said she*; yesterday you were

were preparing me to receive a Visit from the Lunarians, and now you would insinuate there are no such People in Nature: you must not trifle with me thus; once you would have me believe the Moon was inhabited; I surmounted the Difficulty I had, and did believe it. You are a little too nimble, *I reply'd*; did I not advise you never to be entirely convinc'd in things of this nature, but to reserve half of your Understanding free and disengag'd, that you might admit of the contrary Opinion, if there be any occasion? I care not for your Suppositions, *said she*, let us come to Matter of Fact. Are we not to consider the Moon as *St. Dennis*? No, *said I*, the Moon doth not so much resemble the Earth, as *St. Dennis* does *Paris*: The Sun draws from the Earth and Water, Exhalations and Vapours, which mounting to a certain height in the Air, do there assemble and form the Clouds; these uncertain Clouds are driven irregularly round the Globe, sometimes shadowing one Country, and sometimes another: he then who beholds the Earth from afar off, will

will see frequent Alterations upon its Surface, because a great Country, overcast with Clouds, will appear dark or light, as the Clouds stay, or pass over it; he will see the Spots on the Earth often change their place, and appear or disappear as the Clouds remove: but we see none of these Changes wrought upon the Moon, which would certainly be the same, were there but Clouds about her; but on the contrary, all her Spots are fix'd and certain, and her light parts continue where they were at first, which truly is a great Misfortune; for by this reason, the Sun draws no Exhalations or Vapours above the Moon; so that it appears she is a Body infinitely more hard and solid than the Earth, whose subtile parts are easily separated from the rest, and mount upwards as soon as Heat puts them in motion; but it must be a heap of Rock and Marble, where there is no Evaporation: Besides, Exhalations are so natural and necessary, where there is Water, that there can be no Water at all, where there is no Exhalation; and what

what sort of Inhabitants must those be, whose Country affords no Water, is all Rock; and produces nothing? Very fine, *said she*; you have forgot since you assur'd me, we might from hence distinguish Seas in the Moon. Pray, what is become of your *Caspian Sea*, and your *Black Lake*? All Conjecture, Madam, *replied I*; tho' for your Ladyship's sake, I am very sorry for it: for those dark places we took to be Seas, may perhaps be nothing but large Cavities; 'tis hard to guess right at so great a distance. But will this suffice then, *said she*, to extirpate the People in the Moon? Not altogether, *I replied*; we will neither determine for, nor against them. I must own my Weakness (if it be one) *said she*; I cannot be so perfectly undetermin'd as you would have me to be, but must believe one way, or the other; therefore pray fix me quickly in my Opinion, as to the Inhabitants of the Moon: preserve or annihilate them, as you shall think fit; and yet methinks I have a strange Inclination for 'em, and would not have 'em destroy'd,
if

if it were possible to save 'em. You know, Madam, *said I*, I can deny you nothing; the Moon shall be no longer a Desert, but to do you Service, we will repeople her. Since to all appearance the Spots in the Moon do not change, I cannot conceive there are any Clouds about her, that sometimes obscure one part, and sometimes another; yet this does not hinder, but that the Moon sends forth Exhalations, and Vapours. The Clouds which we see in the Air, are nothing but Exhalations and Vapours, which at their coming out of the Earth, were separated into such minute Particles, that they could not be discern'd; but as they ascend higher, they are condens'd by the Cold, and by the re-union of their Parts, are render'd visible; after which they become great Clouds, which fluctuate in the Air, their improper Region, 'till they return back again in Rain to us: however, these Exhalations and Vapours do sometimes keep themselves so dispers'd, that they are imperceptible; or if they do assemble, it is in forming
such

such subtile Dews that they cannot be discern'd to fall from any Cloud. For as it seems incredible that the Moon should be such a Mass, that all its Parts are of an equal Solidity, all at rest with one another, and all incapable of any alteration from the Efficacy of the Sun; I am sure we are yet unacquainted with such a Body: Marble itself is of another Nature; and even that which is most solid, is subject to change and alteration; either from the secret and invisible motion it has within itself, or from that which it receives from without: it may so happen then, that the Vapours which issue from the Moon, may not assemble round her in Clouds, and may not fall back again in Rain, but only in Dews. It is sufficient for this, that the Air with which the Moon is environ'd, (for it is certain she is so, as well as the Earth) should be a little different from our Air, and the Vapours of the Moon be a little different from those of the Earth, which is very probable. Hereupon the matter being otherwise dispos'd in the Moon than on the Earth, the Effects must be different;

different; tho' it is of no great consequence whether they are or no: for from the moment we have found an inward motion in the parts of the Moon, or one produced by foreign Causes, here is enough for the new birth of its Inhabitants, and a sufficient and necessary Fund for their Subsistence. This will furnish us with Corn, Fruit, Water, and what else we please, I mean according to the custom or manner of the Moon, which I do not pretend to know; and all proportion'd to the wants and uses of the Inhabitants, with whom I pretend to be as little acquainted. That is to say, *replied the Marchioness*, you know all is very well, without knowing how it is so, which is a great deal of Ignorance founded upon a very little Knowledge: However, I comfort myself, that you have given the Moon her Inhabitants again, and have wrapp'd her in an Air of her own, without which a Planet would seem but very naked.

'Tis these two different Airs, Madam, that hinder the Communication of the two Planets: - If it was only flying, as

I told you yesterday, who knows but we might improve it to perfection, tho' I confess there is but little hopes of it? The great Distance between the Moon and the Earth, is a Difficulty not easily to be surmounted: yet were the Distance but inconsiderable, and the two Planets almost contiguous, it would be still impossible to pass from the Air of the one into the Air of the other. The Water is the Air of Fishes, they never pass into the Air of the Birds, nor the Birds into the Air of the Fish; and yet 'tis not the Distance that hinders them, but both are imprison'd by the Air they breathe in. We find our Air consists of thicker and grosser Vapours than the Air of the Moon; so that one of her Inhabitants arriving at the Confines of our World, as soon as he enters our Air, will inevitably drown himself, and we shall see him fall dead on the Earth.

I should rejoice, *says the Marchioness*, at a Wreck of these Lunar Folks, as much as my Neighbours on the Coast of *Sussex*: how pleasant would it be to see 'em lie scattered on the Ground,

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where

where we might consider at our ease their extraordinary Figures! But what, *said I*, if they should swim on the outward Surface of our Air, and be as curious to see us, as you are to see them; should they angle or cast a Net for us, as for so many Fishes, would that please you? Why not? *said the Marchioness, smiling*. For my part, I would go into their Nets of my own accord, were it but for the pleasure of seeing such strange Fishermen.

You would be very sick, *said I*, when you were drawn to the top of our Air; for there is no Respiration in all its extent, as may be seen on the tops of some very high Mountains: and I admire, that they who have the Folly to believe that *Fairies*, whom they allow to be corporeal, and to inhabit the most pure and refin'd Air, do not tell us, that the Reason why they give us such short and seldom Visits, is, that there are very few among them that can dive; and those that can, if it be possible to get through the thick Air where we are, cannot stay half so long in it, as
one

one of your Diving Fowls can in the Water. Here then are natural Barricades, which defend the Passage out of our World, as well as the Entry into that of the Moon: so that since we can only guess at that World, let us fancy all we can of it. For Example. I will suppose that we may there see the Firmament, the Sun, and the Stars, of another Colour than what they are here; all these appear to us thro' a kind of natural Opticks, which change and alter the Objects. These Spectacles, as we may call 'em, are our Air, mix'd as it is with Vapours and Exhalations, and which does not extend itself very high. Some of our modern Philosophers pretend, of itself it is blue, as well as the Water of the Sea, and that this Colour neither appears in the one nor in the other, but at a great Depth: the Firmament, say they, where the fix'd Stars are placed, has no peculiar Light of its own, and by Consequence must appear black; but we see it through the Air which is blue, and therefore it appears to us blue; which, if so, the Beams of the Sun and Stars cannot pass thro'

the Air without being ting'd a little with its Colour, and losing as much of their own: yet, were the Air of no Colour, it is very certain, that thro' a great Mist, the Light of a Flambeau at some Distance appears reddish, tho' it be not its true natural Colour. Our Air is nothing but a great Mist, which changes the true Colour of the Sky, Sun, and Stars; it belongs only to the celestial Matter to bring us the Light and Colours, as they really are in all their Purity: so that since the Air of the Moon is of another Nature than our Air, or is diversified by another Colour, or at least is another kind of Mist, which varies the Colours of the Celestial Bodies; in short, as to the People of the Moon, their Spectacles thro' which they see every thing, are chang'd.

If it be so, *said the Marchioness*, I prefer this Abode before that of the Moon; for I cannot believe the Celestial Colours are so well suited as they are here; for Instance, if you put green Stars on a red Sky, they cannot be so agreeable as Stars of Gold on an Azure Firmament. To hear you, one would
 imagine

imagine, Madam, *said I*, you were chusing a Petticoat, or a suit of Knots: but believe me, Nature does not want Fancy; leave it to her to chuse Colours for the Moon, and I'll engage they shall be well sorted; she will not fail to vary the Prospect of the Universe, at every different point of Sight, and always the Alteration shall be very agreeable. I know very well, *said the Marchioness*, her Skill in this Point; she is not at the Charge of changing the Objects, but only the Spectacles, and has the Credit of this great Variety, without being at any Expence: with a blue Air she gives us a blue Firmament; and perhaps with a red Air, she gives to the Inhabitants of the Moon a red Firmament: and yet still it is but the same Firmament; nay, I am of Opinion, she has plac'd a sort of Spectacles in our Imagination, thro' which we see all things, and which to every particular Man, change the Objects. *Alexander* look'd on the Earth as a fit Place to establish a great Empire; it seem'd to *Celadon* a

proper Residence for *Astræa*, and it appear'd to a Philosopher, a great Planet in the Heavens, cover'd with Fools. I do not believe the Sights vary more between the Earth and the Moon, than they do between one Man's Fancy and another's.

This Change in our Imaginations, *says I*, is very surprizing; for they are still the same Objects, tho' they appear different; when in the Moon, we may see other Objects we do not see here, or at least not see all there we do see here. Perhaps in that Country they know nothing of the Dawn and the Twilight, before the Sun rises, and after the Sun sets: the Air which encompasses, and is elevated above us, receives the Rays, so that they cannot strike on the Earth; and being gross, stops some of them, and sends 'em to us, tho' indeed they were never naturally design'd us: so that the Day-break and the Twilight are a Favour which Nature bestows on us; they are Lights which do not properly belong to us, and which she gives us over and above

above our due. But in the Moon, where apparently the Air is more pure, and therefore not so proper to send down the Beams it receives from the Sun before his rising, and after his setting, they have not that Light of Grace (as I may call it) which growing stronger by degrees, does more agreeably prepare them for the arrival of the Sun; and which growing weaker, and diminishing by degrees, does insensibly prepare them for the Sun's departure: but they are in a profound Darkness, where a Curtain (as it were) is drawn all on a sudden, their Eyes are immediately dazzled with the whole Light of the Sun in all its Glory and Brightness; so likewise, they are on a sudden surprized with utter Darkness; the Night and the Day have no medium between them, but they fall in a moment from one Extreme to the other. The Rainbow likewise is not known to the Inhabitants of the Moon; for if the Dawn is an effect of the grossness of the Air and Vapours, the Rainbow is formed in the Clouds, from whence the Rain falls: so that the most

beautiful things in the World, are produced by those which have no beauty at all. Since then there are no Vapours thick enough, nor no Clouds of Rain about the Moon, farewell Dawn, adieu Rainbow: What must Lovers do for Similies in that Country, when such an inexhaustible Magazine of Comparisons is taken from them?

I shall not much bemoan the loss of their Similies or Comparisons, *says the Marchioness*, for I think them well enough recompensed for the loss of our Dawn and Rainbow; for by the same reason they have neither Thunder nor Lightning, both which are formed in the Clouds: How glorious are their Days, the Sun continually shining! how pleasant their Nights, not the least Star is hid from them! They never hear of Storms or Tempests, which certainly are plain effects of the Wrath of Heaven. Do you think then they stand in need of our Pity? You are describing the Moon, *I reply'd*, like an enchanted Island; but do you think it so pleasant to have a scorching Sun always over our Heads,
and

and not the least Cloud to moderate its Heat? Tho' I fancy 'tis for this reason that Nature hath made great Cavities in the Moon: we can discern 'em easily with our Telescopes, for they are not Mountains, but so many Wells or Vaults in the middle of a plain; and how do we know but the Inhabitants of the Moon, being continually broil'd by the excessive Heat of the Sun, do retire into those great Wells? perhaps they live no where else, and 'tis there they build 'em Cities; for we still see in the Ruins of old *Rome*, that that part of the City which was under-ground, was almost as large as that which was above-ground. We need but take that part away, and the rest would remain like one of these Lunar Towns; the whole People reside in Wells, and from one Well to another, there are subterraneous Passages for the Communication of the Inhabitants.

I perceive, Madam, you laugh at me; y t i I may be so free with a fair Lady, y u deserve it much better than I: for y u believe the People in the Moon must live upon the Surface of their
E 5 Planet,

Planet, because we do so upon ours; but quite the contrary: for as we dwell upon the Superficies of our Planet, they should not dwell upon the Superficies of theirs: If things differ so much in this World, what must they do in another?

'Tis no matter, *said the Marchioness*, I can never suffer the Inhabitants of the Moon to live in perpetual Darkness. You will be more concern'd for 'em, *I reply'd*, when I tell you, that one of the antient Philosophers long since discover'd the Moon to be the Abode of the blessed Souls departed out of this Life, and that all their Happiness consisted in hearing the Harmony of the Spheres, which is made by the Motion of the Celestial Bodies: And the Philosopher pretending to know exactly all they do there, he tells you, that when the Moon is obscured by the Shadow of the Earth, they no longer hear the heavenly Musick, but howl like so many Souls in Purgatory; so that the Moon taking Pity of 'em, makes all the haste she can to get into the Light again.

Methinks

Methinks then, *says the Lady*, we should now and then see some of the blessed Souls arrive here from the Moon; for certainly they are sent to us. I confess indeed, *said I*, it would be very pleasant to see different Worlds; such a Voyage, tho' but in Imagination, is very delightful; what would it be in Reality? It would be much better certainly than to go to *Japan*, which at best, is but crawling from one end of the Globe to t'other, and after all to see nothing but Men. Well then, *says she*, let us travel over the Planets as fast as we can; what should hinder us? Let us place ourselves at all the different Prospects, and from thence consider the Universe. But first, have we any thing more to see in the Moon? Yes Madam, *says I*, our Description of that World is not quite exhausted; you must remember, that the two Movements which turn the Moon on herself, and about us, being equal, the one always presents to our Eyes that part of which the other must consequently deprive us, and so she always to us wears
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the same Face. We have then but one Moiety of her which looks on us; and as the Moon must be supposed not to turn on her own Center, in respect to us, that Moiety which sees us always, and that which never sees us, remains fixed in the same point of the Firmament. When it is Night with her, and her Nights are equal to fifteen of our Days, she at first sees but a little Corner of the Earth enlightned, after that a larger Spot, and so almost by hourly Gradations spreads her Light, till it covers the Face of the whole Globe; whereas these same Changes do not appear to us to affect the Moon, but from one Night to another; because we lose her a long time out of our Sight. I would give any thing that I could possibly fathom the awkward Reasonings of the Philosophers of their World upon our Earth's appearing immoveable to them, when all the other celestial Bodies rise and set over their Heads within the Compass of fifteen Days: It is plain they attribute this Immobility to her Bigness, for she is forty times larger than the Moon; and

and when their Poets have a mind to extol indolent Princes, I doubt not but they take Care to compare their Inactivity to this majestic Repose of the Earth: However, this Opinion is attended with one Difficulty; they must very sensibly perceive in the Moon, that our Earth turns upon her own Center. For instance, suppose that *Europe, Asia, and America* present themselves one after another to them in Miniature, and in different Shapes and Figures, almost as we see them upon Maps: Now this Sight must be a Novelty to such Travellers, as pass from that Moiety of the Moon which never sees us, to that which always does. Ah! how cautious would they be of believing the Relation of the first Travellers, who should speak of it after their Return to that great Country, to which we are so entirely unknown! Now I fancy, *says the Marchioness*, they make a sort of Voyage from one Side of their Country to the other, to try to make Discoveries in our World; and that there are certain Honours and Privileges assigned to such as have, once in their Lives, had a View
of

of our great Planet. At least, *replied I*, those who have had this View, obtained the Privilege of being better lighted during their Nights; the Residence in the other Moiety of the Moon must of Necessity be much less commodious in that Respect. But now let us continue the Journey we proposed to take from one Planet to another, for I think we have had a pretty curious Survey of the Moon, at least, you have seen all I can shew you. Leaving the Moon on the Side next the Sun, we see *Venus*, which puts me again in mind of *St. Dennis*. *Venus* turns upon herself, and round the Sun, as well as the Moon; they likewise discover by their Telescopes, that *Venus*, like the Moon (if I may speak after the same manner) is sometimes new, sometimes full, and sometimes in the Wain, according to the different Situations she is in with respect of the Earth.

The Moon, to all appearance, is inhabited; why should not *Venus* be so too? You are so full of your Why's and your Wherefore's, *says the Marchioness, interrupting me*, that I fancy you are sending
Colonies

Colonies to all the Planets. You may be certain, Madam, *I reply'd*, that I will; for I see no reason to the contrary: We find that all the Planets are of the same Nature, all obscure Bodies, which receive no Light but from the Sun, and then send it to one another: their Motions are the same, so that hitherto they are alike; and yet, if we are to believe that these vast Bodies are not inhabited, I think they were made but to little Purpose: Why should Nature be so partial, as to except only the Earth? But let who will say the contrary, I must believe the Planets are peopled as well as the Earth. I find, *says the Marchioness with some Concern*, a Philosopher will never make a good Martyr, you can so quickly shift your Opinion; 'twas not many Minutes since, the Moon was a perfect Desert; now I see you would be very angry, if any one should say all the rest of the Planets are not inhabited. Why truly, Madam, *said I*, there is a time for all things; and your true Philosopher believes any thing, or nothing, as the Maggot bites. And this is not so very improbable

probable as you think it: For I cannot help thinking it would be very strange, that the Earth should be so well peopled, and the other Planets not inhabited at all; for do you believe we discover (as I may say) all the Inhabitants of the Earth? There are as many kinds of invisible as visible Creatures. We see from the Elephant to the very Pismire, beyond which our Sight fails us; and yet, counting from that minute Creature, there are an Infinity of lesser Animals, which would be imperceptible without the Aid of Glasses. But our magnifying Glasses shew us, that in the least Drop of Rain-water, Vinegar, or any other Liquid, there are great Numbers of little Fishes or Serpents, which we could never have suspected there; and Philosophers believe, that the acid Taste of these Liquids proceeds from a Sharpness issued thro' the forked Stings of these Animals, lodged under their Tongues; and further, that by mixing certain Things with any one of these Liquors, and letting them stand and corrupt, will produce a new Species of little Animals.

Several

Several, even of the most solid Bodies, are nothing but an immense Swarm of imperceptible Insects. Do but consider this Mulberry Leaf: It is a great World inhabited by Multitudes of these invisible Worlds; it is to them a Country of a vast Extent; what Mountains, what Abyſſes are there in it! The Insects of one side know no more of their Fellow-Creatures on t'other, than you and I can tell what they are now doing at the Antipodes: is it not reasonable then to imagine that a great Planet should be inhabited? In the hardest Stones, for example, in Marble there are an Infinity of Worms, which fill up the Vacuums, and feed upon the Substance of the Stone. Fancy then Millions of living Creatures to subsist many Years on a Grain of Sand; so that were the Moon but one continued Rock, I would rather she should be gnaw'd by these invisible Mites than not be inhabited. In short, every thing is animated. Imagine then those Animals which are yet undiscovered, and add them and those which are but lately discovered, to those we have always seen, you will

will find the Earth swarms with Inhabitants, and that Nature has so liberally furnished it with Animals, that she is not in the least concerned for our not seeing above one half of them. Why then should Nature, which is fruitful to an Excess here, be so very barren as to produce no living Things in the rest of the Planets? I must own, *said the Marchioness*, you have convinc'd my Reason, but you have confounded my Fancy with such Variety, that I cannot imagine how Nature, which hates Repetitions, should produce so many different Kinds. There is no need of Fancy, *reply'd I*; do but trust your Eyes, and you will easily perceive how Nature diversifies in these several Worlds.

All human Faces in general are of the same Model, and yet the *Europeans* and the *Africans* have two particular Molds: nay, commonly every Family has a different Aspect. What Secret then has Nature to shew so much Variety in a single Face? Our World, in respect of the Universe, is but a little Family: where

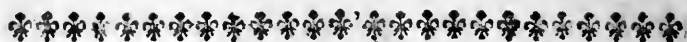
where all the Faces bear some Resemblance to each other ; in another Place is another Family, whose Faces have quite a different Air and Make. The Difference too increases with the Distance ; for whosoever should see an Inhabitant of the Moon, and an Inhabitant of the Earth, would soon perceive they were nearer Neighbours than one of the Earth, and one of *Saturn* : here, for Example, we have the use of Voice ; in another World they speak by Signs ; and at a greater Distance they do not speak at all. Here our Reason is form'd by Experience ; in the next World, Experience contributes little towards it ; and in the next to that, old Men know no more than Children. Here we are troubled more with what is to come, than with what is past : in the next World they are more troubled for what is past, than for what is to come : further off they are not concern'd with either, which, by the way, I think is much the better. Here 'tis thought we want a sixth Sense, which would teach us many things of which

we

we are now ignorant: this sixth Sense is apparently in another World, where they want one of the five which we enjoy. Nay, perhaps there is a much greater Number of Senses; but in the Partition we have made of 'em with the Inhabitants of the other Planets, there are but five fallen to our Share, with which we are well contented, for want of being acquainted with the rest. Our Sciences have Bounds, which the Wit of Man could never pass; there is a Point where they fail us on a sudden, the rest is reserved for other Worlds, where somewhat which we know, is unknown to them. This Planet enjoys the Pleasures of Love, but lies desolate in several Places by the Fury of War: in another Planet they enjoy perpetual Peace, yet in the midst of that Peace, know nothing of Love, and Time lies on their Hands. In a Word, that which Nature practises here in little, in distributing her Gifts among Mankind, she does at large in other Worlds, where she makes use of that admirable Secret she has to
 diversify

diversify all things, and at the same time makes 'em equal, by compensating for the Inequality.

But is it not time, Madam, to be serious? how will you dispose of all these Notions? Trouble not yourself, *says she*, Fancy is a great Traveller: I already comprehend these several Worlds, and represent to myself their different Characters and Customs: some of 'em, I assure you, are very extraordinary. I see at this Moment a thousand different Figures, tho' I cannot well describe 'em. Oh leave them, *said I*, to your Dreams: we shall know Tomorrow whether they represent the Matter faithfully, and what they have taught you in relation to the Inhabitants of any of the Planets.



The Fourth Evening.

Particulars of the Worlds of Venus, Mercury, Mars, Jupiter, and Saturn.

THE Dreams of the Marchioness were not very successful; they still represented to her the same Objects we are acquainted with here on Earth. We were therefore forced to conclude ourselves ignorant what sort of Inhabitants all these Planets had, and content ourselves only to guess at them, and continue the Voyage we had begun thro' these several Worlds. We were come to *Venus*, and I told her, that *Venus* certainly turn'd on itself, tho' nobody could tell in what time; and consequently were ignorant how long her Day lasted; but her Year was compos'd of 8 Months, because it is in that time she turns round the Sun. And seeing *Venus* is 40 times less than
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the Earth, the Earth appears to them in *Venus* to be a Planet, 40 times bigger than *Venus* appears to us on the Earth: and as the Moon is 40 times lesser than the Earth, so she seems to be just of the same Magnitude, to the Inhabitants of *Venus*, as *Venus* seems here to us.

I see then, *says the Marchioness*, that the Earth is not to *Venus*, what *Venus* is to the Earth: I mean, that the Earth is too big to be the Mother of Love, or the Shepherd's Star to *Venus*; but the Moon which appears to *Venus* of the same Bigness as *Venus* appears to us, is assign'd to be the Mother of Love, and Shepherd's Star to *Venus*; for such Names are only proper for a little brisk airy Planet, bright and shining as the Goddess herself. Oh blessed Moon, how happy art thou to preside over the Amours of those gallant Inhabitants of *Venus*, where all they say is soft and moving, and perfectly refined!

O without Doubt, *says I*, the very common People of *Venus* are all *Celadons* and *Silvanders*, and their most trivial Discourses

courses are infinitely finer than any in *Clelia*: their very Climate inspires Love; *Venus* is much nearer than the Earth to the Sun, from whence she receives a more vigorous and active Influence.

I find, *says the Marchioness*, it is easy enough to guess at the Inhabitants of *Venus*; they resemble what I have read of the *Moors* of *Granada*, who were a little black People, scorched with the Sun, witty, full of Fire, very amorous, much inclin'd to Musick and Poetry, and ever inventing Masques and Tournaments in honour of their Mistresses. Pardon me, Madam, *said I*; you are little acquainted with the Planet. *Granada*, in all its Glory, was a perfect *Greenland* to it; and your gallant *Moors*, in comparison with that People, were as stupid as so many *Laplanders*.

But what do you think then of the Inhabitants of *Mercury*? They are yet nearer to the Sun, and are so full of Fire, that they are absolutely mad; I fancy they have no Memory at all, like most of the Negroes, that they make no Reflections; and what they do is by sudden

sudden starts, and perfect hap-hazard. In short, *Mercury* is the Bedlam of the Universe: the Sun appears to them much greater than it does to us, because they are much nearer to it than we: it sends them so vast and strong a Light, that the most glorious Day here would be no more with them than a declining Twilight. I know not if they can distinguish Objects; but the Heat to which they are accustomed, is so excessive, that they would be starv'd with Cold in the torrid Zone. Their Year is but three Months; but we know not the exact length of their Day, because *Mercury* is so little, and so near the Sun: it is (as it were) lost in his Rays, and is very hardly discover'd by the Astronomers; so that they cannot observe how it moves on its Center; but because it is so little, fancy it compleats its Motion in a little time: so that by consequence the Day there is very short, and the Sun appears to them like a vast fiery Furnace at a little distance, whose Motion is prodigiously swift and rapid, which is so much the better for them, as it is evi-

dent they must long for Night; and during their Night, *Venus* and the Earth (which must appear considerably big) gives Light to them. As for the other Planets which are beyond the Earth, towards the Firmament, they appear less to them in *Mercury*, than they do to us here, and they receive but little Light from them, perhaps none at all: the fixed Stars likewise seem less to them, and some of 'em totally disappear, which, were I there, I should esteem a very great loss. I should be very uneasy to see this large Convex studded with but few Stars, and those too of the least Magnitude and Lustre.

What signifies the loss of a few fixed Stars, *says the Lady*? I pity them for the excessive Heat they endure: let us give them some Relief, and send *Mercury* a few of the refreshing Showers they have sometimes four Months together in the hottest Countries, during their greatest extremity. Your Fancy is good, *Madam*, *reply'd I*; but we will relieve 'em another way. In *China* there are Countries which are extremely hot by their
Situation

Situation; yet in *July* and *August* are so cold, that the Rivers are frozen: the Reason is, they are full of Salt-Petre, which being exhal'd in great abundance by the excessive heat of the Sun, makes a perfect Winter at Midsummer. We will fill the little Planet with Salt-Petre, and let the Sun shine as hot as he pleases. And yet after all, who knows but the Inhabitants of *Mercury* may have no occasion either for Rain or Salt-Petre? If it is a certain Truth, that Nature never gives life to any Creature, but where that Creature may live; then, thro' Custom and Ignorance of a better Life, those People may live happily.

After *Mercury* comes the Sun; but there is no possibility of peopling it, nor no room left for a Wherefore. By the Earth which is inhabited, we judge that other Bodies of the same nature may be likewise inhabited: But the Sun is a Body not like the Earth, or any of the Planets; the Sun is the Source or Fountain of Light; which, tho' it is sent from one Planet to another, and receives several

Alterations by the way, yet all originally proceeds from the Sun: he draws from himself that precious Substance which he emits from all sides, and which reflects when it meets with a solid Body, and spreads from one Planet to another those long and vast Trains of Light which cross, strike thro', and intermingle in a thousand different Fashions, and make (if I may so say) the richest Tissues in the World. The Sun likewise is placed in the Center, from whence, with most Convenience, he may equally distribute, and animate by his Heat. It is then a particular Body, but what sort of Body, has often puzzled better Heads than mine. It was thought formerly a Body of pure Fire; and that Opinion passed current till the beginning of this Age: when they perceiv'd several Spots on its Surface. A little after they had discover'd new Planets, (of which hereafter) which some say were those Spots; for those Planets moving round the Sun, when they turn'd their dark half to us, must necessarily hide part of it: and had not the Learned, with these pretended

Planets,

Planets, made their court before to most of the Princes in *Europe*, giving the Name of this Prince to one, and of that Prince to another Planet, I believe they would have quarrell'd who should be Master of these Spots, that they might have nam'd them as they pleas'd.

'Twas but t'other day, *says the Lady*, you were describing the Moon, and call'd several Places by the Names of the most famous Astronomers. I was pleas'd with the Fancy : For since the Princes have seiz'd on the Earth, 'tis fit the Philosophers (who are as proud as the best of 'em) should reserve the Heavens for themselves without any Competitors. Oh ! trouble not yourself, *said I*, the Philosophers make the best advantage of their Territories ; and if they part with the least Star, 'tis on very good Terms : But the Spots on the Sun are fallen to nothing. 'Tis now discover'd that they are not Planets, but Clouds, Streams, or Dross, which rise upon the Sun, sometimes in a great quantity, sometimes in a less ; sometimes they are dark, sometimes clear ;

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sometimes they continue a great while, and sometimes they disappear as long. It seems the Sun is a liquid Matter ; some think, of melted Gold, which boils over as it were continually, and by the Force of its Motion calls the Scum or Dross on its Surface, where it is consum'd, and others arise. Imagine then what strange Bodies these are, when some of them are as big as the Earth. What a vast quantity must there be of this melted Gold! and what must be the Extent of this great Sea of Light and Fire which they call the Sun? Others say, the Sun appears thro' their Telescopes full of Mountains, which vomit Fire continually, and are joined together like Millions of *Etna's*. Yet there are those that say, these burning Mountains are pure Vision, caus'd by a fault in the Spectacles; but what shall we trust, if we must distrust our Telescopes, to which we owe the knowledge of so many new Objects? But let the Sun be what it will, it cannot be at all proper for Habitation; and what pity that is! for how pleasant would it be!

You

You might then be at the Center of the Universe, where you would see all the Planets turn regularly about you ; but now we know nothing but extravagant Fancies, because we do not stand in the proper Place. There is but one place in the World, where the Study or Knowledge of the Stars is easily obtain'd, and what pity 'tis there is no body there ! You forget your self, sure, *says she* ; were you in the Sun you would see nothing, neither Planets nor fixed Stars: doth not the Sun efface all? So that could there be any Inhabitants there, they might justly think themselves the only People in Nature.

I own, *said I*, my Mistake: I was thinking of the Situation of the Sun, and not of the Effect of its Light: I thank you for your Correction; but must take the Boldness to tell you, that you are in an Error as well as my self: for were there Inhabitants in the Sun, they would not see at all; either they could not bear the Strength of its Light, or for want of a due distance, they could not receive it; so that things

well consider'd, all the People there must be stark blind, which is another reason why the Sun cannot be inhabited. But let us pursue our Voyage. We are now arriv'd at the Center, which is always the Bottom or lowest Place of what is round: if we go on, we must ascend: we shall find *Mercury*, *Venus*, the Earth, the Moon, all the Planets we have already visited; the next is *Mars*, who affords nothing curious that I know of; his Day is not quite an hour longer than ours, but his Year is twice as long: He is a little less than the Earth; and the Sun seems not altogether so large and so bright to him, as it appears to us. But let us leave *Mars*, he is not worth our stay. But what a pretty thing is *Jupiter*, with his four Moons, or Yeomen of the Guard! they are four little Planets that turn round him, as our Moon turns round us. But why, *says she*, interrupting me, must there be Planets to turn round other Planets, that are no better than themselves? I should think it would be more regular and uniform, that all the Planets, little and great,

without

without any distinction, should have one and the same Motion round the Sun.

Ah, Madam, *said I*, if you knew what were *Descartes's* Whirlpools or Vortexes (whose Name is terrible, but their Idea pleasant) you would not talk as you do. Must my Head (*says she, smiling*) turn round to comprehend 'em, or must I become a perfect Fool to understand the Mysteries of Philosophy? Well, let the World say what it will, go on with your Whirlpools. I will, *said I*; and you shall see the Whirlpools are worthy of these Transports. That then which we call a Whirlpool or Vortex, is a Mass of Matter, whose Parts are separated or detach'd one from another, yet have all one uniform Motion; and at the same time every one is allow'd, or has a particular Motion of its own, provided it follows the general Motion. Thus a Vortex of Wind, or Whirlwind, is an Infinity of little Particles of Air, which turn round all together, and involve whatever they meet with. You know the Planets are borne up by the Celestial Matter, which is very subtile and active;

so that this great Mass, or Ocean of Celestial Matter, which flows as far as from the Sun to the fixed Stars, turns round, and bears the Planets along with it, making them all turn after the same manner round the Sun, who possesses the Center, but in a longer or a shorter time, according as they are farther or nearer in distance to it. There is not any Planet next the Sun, which does not turn, but he turns on himself, because he is just in the middle of this Celestial Matter: And you must know by the way, that were the Earth in his place, it must turn on it self, as the Sun does. This is the great Vortex, of which the Sun is Lord; yet at the same time, the Planets make little particular Vortexes, in imitation of that of the Sun; each of them in turning round the Sun, does at the same time turn round itself, and makes a certain Quantity of Celestial Matter turn round it likewise, which is always prepar'd to follow the Motion the Planet gives it, provided it is not diverted from its general Motion: this then is the particular Vortex of the Planet,

Planet, which pushes it as far as the Strength of its Motion reaches; and if by chance a lesser Planet falls into the Vortex of a greater Planet, it is immediately borne away by the greater, and is indispensably forc'd to turn round it, tho' at the same time the great Planet, the little Planet, and the Vortex which encloses 'em, all turn round the Sun. 'Twas thus at the beginning of the World, when we made the Moon follow us, because she was within the reach of our Vortex, and therefore wholly at our disposal. *Jupiter* was stronger, or more fortunate than we; he had four little Planets in his Neighbourhood, and he brought 'em all four under his Subjection; and no doubt we, tho' a principal Planet, had met the same Fate, had we been within the Sphere of his Activity: he is ninety times bigger than the Earth, and would certainly have swallow'd us into his Vortex; we had then been no more than a Moon in his Family, when now we have one to wait on us: so that, you see, the advantage of Situation decides often all our good Fortune. But

But pray, *says she*, who can assure us we shall still continue as we do now? If we should be such Fools as to go near *Jupiter*, or be so ambitious as to approach us, what will become of us? For if (as you say) the Celestial Matter is continually under this great Motion, it must needs agitate the Planets irregularly; sometimes drive 'em together, and sometimes separate 'em. Luck is all, *said I*; we may win as well as lose; and who knows but we might bring *Mercury* and *Venus* under our Government? they are little Planets, and cannot resist us. But in this Particular, Madam, we need neither hope nor fear; the Planets keep within their own Bounds, and are oblig'd (as formerly the Kings of *China* were) not to undertake new Conquests. Have you not seen when you put Water and Oil together, the Oil swims a-top? and if to these two Liquors, you add a very light Liquor, the Oil bears it up, and it will not sink to the Water; but put an heavier Liquor, of a just weight, and it will pass through the Oil, which is too weak to sustain it,

and

and sink till it comes to the Water, which is strong enough to bear it up: So that in this Liquid compos'd of two Liquors, which do not mingle, two Bodies of an unequal weight will naturally assume two different places; the one will never ascend, the other will never descend. If we put still other Liquors which do not mingle, and throw other Bodies on them, it will be the same Thing. Fancy then that the Celestial Matter, which fills this great Vortex, has several resting-places one by another, whose weight are different, like that of Oil, Water, and other Liquors; the Planets too are of a different weight, and consequently every Planet settles in that place which has a just strength to sustain and keep it equilibrate: so you see 'tis impossible it should ever go beyond.

I very well apprehend, *says she*, that these Weights keep their stations regularly. Would to God our World were as well regulated, and every one among us knew their proper place. I am now in no fear of being over-run by *Jupiter*;
and

and ſince he lets us alone in our Vortex with our Moon, I do not envy him the four which he has. Did you envy him, *I reply'd*, you would do him wrong, for he has no more than what he has occaſion for ; at the diſtance he is from the Sun, his Moons receive and ſend him but a very weak Light. It is true, that as he turns upon himſelf in 10 Hours, his Nights, by conſequence, are but 5 Hours long ; ſo one would think there is no great occaſion for 4 Moons. But there are other things to be conſidered : Here under the Poles they have 6 Months Day, and 6 Months Night, becauſe the Poles are the two Extremities of the Earth, the fartheſt remov'd from thoſe Places where the Sun is over 'em in a perpendicular Line. The Moon ſeems to keep almoſt the ſame courſe as the Sun ; and if the Inhabitants of the Pole ſee the Sun during one half of his courſe of a Year, and during the other half do not ſee him at all ; they ſee the Moon, like-wiſe during one half of her courſe of a Month ; that is, ſhe appears to 'em 15 Days, but they do not ſee her during the
other

other half. *Jupiter's* Year is as much as 12 of ours; so that there must be two opposite Extremities in that Planet, where their Night and their Day are 6 Years each. A Night 6 Years long is a little disconsolate, and 'tis for that reason, I suppose, they have 4 Moons; that which (in regard to *Jupiter*) is uppermost, finisheth its course about him in 17 Days, the second in 7, the third in 3 days and an half, and the fourth in 42 Hours: and tho' they are so unfortunate as to have 6 years Night, yet their course being exactly divided into halves, they never pass above 21 Hours, wherein they do not see at least the last Moon, which is a great Comfort in so tedious a Darkness: so that be where you will, these 4 Moons are sometimes the prettiest sight imaginable; sometimes they rise all 4 together, and then separate according to the Inequality of their course; sometimes they are all in their Meridian, rang'd one above another; sometimes you see 'em at equal Distances on the Horizon; sometimes when two rise, the other two go down. Oh! how I should love to see
this

this pleasant Sport of Eclipses ! for there is not a Day passes, but they eclipse the Sun, or one another ; and they are so accustomed to these Eclipses in that Planet, that they are certainly more of Diversion than of Fear.

Well, *says the Marchioness*, I hope you will people these four Moons, tho' you say they are but little secondary Planets, appointed to give Light to another Planet during its Night. Do not doubt it, *I reply'd* ; these Planets are not a Jot the worse to be inhabited, for being forc'd to turn round another Planet of greater Consequence. I would have then, *says she*, the People of these four Moons, to be so many Colonies under *Jupiter's* Government ; they should, if it were possible, receive their Laws and Customs from him, and consequently pay him a kind of Homage, and not view his great Planet without paying a Deference. Would it not be convenient too, *said I*, that they should send Deputies with Addresses to him ? for he has certainly a more absolute Command over his Moon, than we have over ours ; tho' his Power,
after

after all, is but imaginary, and consists chiefly in making them afraid: for that Moon which is nearest to him, sees that he is 360 times bigger than our Moon appears to us; for in truth, he is so much bigger than she: he is also much nearer to them, than our Moon is to us, the which makes him appear the greater, so that this formidable Planet hangs continually over their Heads at a very little Distance. And if the *Gauls* were afraid heretofore that the Heavens would fall on 'em, I think the Inhabitants of that Moon may well be apprehensive that *Jupiter* will at some time or other overwhelm them. I fancy, *says she*, they are possessed with that Fear, because they are not concerned at Eclipses. Every one has their particular Folly: we are afraid of an Eclipse, and they, that *Jupiter* will fall on their Heads. It is very true, *said I*; the Inventer of the third System, I told you t'other Night, the famous *Tycho Brahe*, one of the greatest Astronomers that ever was, did not apprehend the least Danger from an Eclipse, when every body else was
under

under the greatest Consternation; yet this great Man had as an unaccountable a Fear, did a Hare cross him, or if the first Person he met in a Morning was an old Woman, home presently went *Tycho Brahe*, he shut himself up for that Day, and would not meddle with the least Business.

It would be very unreasonable, *reply'd she*, when such a Man could not redeem himself from the Fear of Eclipses, without falling into some other Whimsy as troublesome, that the Inhabitants of that Moon of *Jupiter*, of which we are talking, should come off upon easier Terms. But we will give them no Quarter, they shall come under the general Rule, and if they are free from one Error, shall fall into another to put them upon an Equivalent. But as I do not trouble myself, because I cannot guess what the next Error may be, pray clear up one more Difficulty to me, which has given me Pain for some Minutes. Tell me, if the Earth be so little in comparison of *Jupiter*, whether his Inhabitants do discover

cover us? Indeed, *said I*, I believe not; for if we appear to him ninety times less than he appears to us, judge you if there be any Possibility: yet this we may reasonably conjecture, that there are Astronomers in *Jupiter*, who after they have made the most curious Telescopes, and taken the clearest Night for their Observations, they may have discover'd a little Planet in the Heavens, which they never saw before. If they publish their Discovery, most People know not what they mean, or laugh at them for Fools: nay, the Philosophers themselves will not believe 'em, for fear of destroying their own Opinions; yet some few may be a little curious; they continue their Observations, discover the little Planet again, and are now assur'd it is no Vision; then they conclude it has a Motion round the Sun, which it compleats in a Year: and at last (thanks to the Learned) they know in *Jupiter* our Earth is a World, every body runs to see it at the end of the Telescope, tho' 'tis so little, 'tis hardly to be discern'd.

It

It must be pleasant, *says she*, to see the Astronomers of both Planets leveling their Tubes at one another, like two Files of Musqueteers, and mutually asking, what World that is? What People inhabit it? Not so fast neither, *I reply'd*; for tho' they may from *Jupiter* discover our Earth, yet they may not know us; that is, they may not have the least Suspicion it is inhabited: and should any one there chance to have such a Fancy, he might be sufficiently ridicul'd, if not prosecuted for it. For my part, I believe they have Work enough to make Discoveries on their own Planet, not to trouble their Heads with ours: And had Sir *Francis Drake* and *Columbus* been in *Jupiter*, they might have had good Employments: why, I warrant you they have not yet discover'd the hundredth part of their Planet. But if *Mercury* is so little, they are all as it were near Neighbours; and 'tis but taking a Walk, to go round that Planet. But if we do not appear to 'em in *Jupiter*, they cannot certainly discover *Venus* and *Mercury*, which are much less than the Earth,

Earth, and at a greater distance; but in lieu of it, they see *Mars*, their own four Moons, and *Saturn* with his: This, I think, is work enough for their Astronomers; and Nature has been so kind to conceal from them the rest of the Universe. Do you think it a Favour then, *says she*? Yes, certainly, *said I*; for there are sixteen Planets in this great Vortex. Nature saves us the trouble of studying the Motions of them all, and shews us but seven, which, I think, is very obliging, tho' we know not how to value the Kindness; for we have recover'd the other nine which were hid from us, and so render the Science of Astronomy much more difficult than Nature design'd it.

If there are sixteen Planets, *said she*, *Saturn* must have five Moons. 'Tis very true, *said I*; and two of these five are but lately discover'd: but there is somewhat that is more remarkable; since his Year makes thirty of ours, there are consequently in him some Countries, where their Night is fifteen Years long; and what can you imagine Nature has invented

vented to give Light, during so dreadful a Night? Why, she has not only given *Saturn* five Moons, but she has encompass'd him round with a great Circle or Ring, which being plac'd beyond the reach of the Shadow which the Body of that Planet casts, reflects the Light of the Sun continually on those Places where they cannot see the Sun at all.

I protest, *says the Marchioness*, this is very surprizing; and yet all is contriv'd in such great Order, that it is impossible not to think but nature took time to consider the Necessities of all animate Beings, and that the disposing of these Moons was not a work of Chance; for they are only divided among those Planets which are farthest distant from the Sun, the Earth, *Jupiter* and *Saturn*. Indeed it was not worth while to give any to *Mercury* or *Venus*; they have too much Light already; and they account their Nights (as short as they are) a greater Blessing than their Days. But pray, why has not *Mars* a Moon too? It seems he has none, tho' he is much farther than the Earth from the Sun. It is very true,
said

said I; no doubt but he has other helps tho' we don't know 'em: You have seen the *Phosphorus*, both liquid and dry, how it receives and imbibes the Rays of the Sun, and what a great Light it will cast in a dark Place. Perhaps *Mars* has many great high Rocks, which are so many natural *Phosphorus*'s, which in the Day take in a certain Provision of Light, and return it again at Night. What think you, Madam, is it not very pleasant, when the Sun is down, to see those lighted Rocks, like so many Illuminations at a Birth-day Night? Besides, there is a kind of Bird in *America* that yields such a Light, you may read by it in the darkest Night: and who knows but *Mars* may have great Flocks of these Birds, that as soon as it is Night, disperse themselves into all Parts, and spread from their Wings another Day?

I am not at all contented, *says she*, with your Rocks or your Birds: 'tis a pretty fancy indeed; but 'tis a sign that there should be Moons in *Mars*, since Nature has given so many to *Saturn* and *Jupiter*: and if all the other Worlds that
are

are distant from the Sun have Moons, why should *Mars* only be excepted? Ah, Madam, *said I*, when you are a little more dipt in Philosophy, you will find Exceptions in the very best Systems. There are always some things that agree extremely well; but then there are others that do not accord at all: those you must leave as you found 'em, if ever you intend to make an end. We will do so by *Mars*, if you please, and say no more of him, but return to *Saturn*. What do you think of this great Ring in the Form of a Semicircle, that reaches from one end of the Horizon to the other, which reflecting the Light of the Sun, performs the Office of a continual Moon? And must not we inhabit this Ring too, *says she smiling*? I confess, *said I*, in the Humour I am in, I could almost send Colonies every where; and yet I can't well plant any there, it seems so irregular a Habitation: but for the five little Moons, they cannot chuse but be inhabited; tho' some think this Ring is a Circle of Moons, which follows close to one another, and have an equal Motion, and that the five
 little

little Moons fell out of this Circle: how many Worlds are there then in the Vortex of *Saturn*? But let it be how it will, the People in *Saturn* live very miserably. 'Tis true, this Ring gives Light to 'em, but it must be a very poor one, when the Sun seems to 'em but a little pale Star, whose Light and Heat cannot but be very weak at so great a Distance: they say, *Greenland* is a perfect Bagnio in comparison of that Planet, and that they would expire with Heat in our coldest Countries.

You give me, *says she*, such an Idea of *Saturn*, that makes me shake with Cold, and that of *Mercury* puts me into a Fever. It cannot be otherwise, *I reply'd*; for the two Worlds, which are the Extremities of this great Vortex, must be opposite in all things. They must then, *says she*, be very wise in *Saturn*; for you told me they were all Fools in *Mercury*. If they are not wise, *said I*, yet they have all the Appearances of being very phlegmatick. They are People that know

not what it is to laugh; they take a Day's time to answer the least Question you can ask them; and are so very grave, that were *Cato* living among them, they would think him a *Merry-Andrew*.

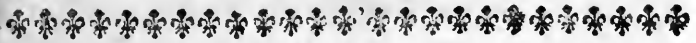
It is odd to consider, *says she*, that the Inhabitants of *Mercury* are all Life, and the Inhabitants of *Saturn* quite contrary; but among us, some are brisk, and some are dull: It is, I suppose, because our Earth is plac'd in the Middle of the other Worlds, and so we participate of both Extremes; there is no fix'd or determin'd Character; some are made like the Inhabitants of *Mercury*, some like those of *Saturn*; we are a Mixture of the several Kinds that are found in the rest of the Planets. Why, *said I*, do you not approve of the Idea? Methinks it is pleasant to be compos'd of such a fantastical Assembly, that one would think we were collected out of different Worlds. We need not travel abroad, when we see the other Worlds in Epitome at home.

I am

I am sure, *says the Marchioness*, we have one great Convenience in the Situation of our World; it is not so hot as *Mercury* or *Venus*, nor so cold as *Jupiter* or *Saturn*: and our Country is so temperately plac'd, that we have no Excess either of Heat or Cold. I have heard of a Philosopher, who gave Thanks to Nature, that he was born a Man, and not a Beast; a *Greek*, and not a *Barbarian*: and for my part, I render Thanks, that I am seated in the mildest Planet of the Universe; and in one of the most temperate Regions of that Planet. You have more reason, *said I*, to give Thanks that you are young, and not old; that you are young and handsome, and not young and ugly; that you are young, handsome, and a *French* Woman, and not young, handsome, and an *Italian*: these are more proper Subjects for your Thanks, than the Situation of your Vortex, or the Temperature of your Country.

Pray, Sir, *says she*, let me give Thanks for all things, to the very Vortex in which I am planted. Our Pro-

portion of Happiness is so very small, that we should not lose any, but improve continually what we have, and be grateful for every thing, tho' ever so common or inconsiderable. If nothing but exquisite Pleasure will serve us, we must wait a long time, and be sure to pay too dear for it at last. I wish, *said I*, that Philosophy was the Pleasure you propose, that when you think of Vortexes, you would not forget an humble Servant of your Ladyship's. I esteem it a Pleasure, *says she*, while it diverts innocently, but no longer. I will engage for it till To-morrow, *I reply'd*; for the fixed Stars are beyond what you have yet seen.



The Fifth Evening.

Shewing, that the fixed Stars are so many Suns, every one of which gives Light to a World.

THE Marchioness was very impatient to know what would become of the fixed Stars: Are they peopled, *says she*, as the Planets are? Or are they not inhabited at all? Or in short, what shall we do with 'em? You may soon guess, *said I*; the fixed Stars can't be less distant from the Earth than fifty millions of Leagues; nay, if you anger an Astronomer, he will set 'em farther. The Distance from the Sun to the farthest Planet is nothing, in comparison of the Distance from the Sun or from the Earth to the fixed Stars; it is almost beyond Arithmetick. You see their Light is bright and shin-

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ing;

ing ; and did they receive it from the Sun, it must needs be very weak after a Passage of fifty Millions of Leagues : then judge how much it is wasted by Reflection ; for it comes back again as far to us : so that forwards and backwards, here are an hundred Millions of Leagues for it to pass ; and it is impossible it should be so clear and strong as the Light of a fixed Star, which cannot but proceed from itself : so that, in a Word, all the fixed Stars are luminous Bodies in themselves, and so many Suns.

I perceive, *says the Marchioness*, where you would carry me : you are going to tell me, that if the fixed Stars are so many Suns, and our Sun the Center of a Vortex that turns round him ; why may not every fixed Star be the Center of a Vortex, that turns round the fixed Star ? Our Sun enlightens the Planets : why may not every fixed Star have Planets to which they give Light ? You have said it, *I reply'd*, and I shall not contradict you.

You

You have made the Universe so large, *said she*, that I know not where I am, or what will become of me: What, is it all to be divided into Vortexes confusedly one among another? Is every Star the Center of a Vortex, as big as ours? Is that vast Space which comprehends our Sun and Planets but an inconsiderable part of the Universe? And are there as many such Spaces, as there are fixed Stars? I protest it is dreadful, the very Idea of it confounds and overwhelms me. Dreadful! *Madam, said I*; I think it very pleasant: When the Heavens were a little blue Arch, stuck with Stars, methought the Universe was too strait and close; I was almost stifled for want of Air: but now it is enlarg'd in Height and Breadth, and a thousand and a thousand Vortexes taken in, I begin to breathe with more freedom, and think the Universe to be incomparably more magnificent than it was before. Nature has spar'd no Cost, even to Profuseness; and nothing can be so glorious, as to see such a prodigious Number of Vortexes, whose several Centers are possess'd by a par-

ticular Sun, which makes the very Planets turn round it. The Inhabitants of a Planet of one of these innumerable Vortexes, behold on all Sides these luminous Centers of the Vortex, with which they are encompass'd: but perhaps they do not see the Planets, who receiving but a faint Light from their Sun, cannot send it beyond their own World.

You present me with a Prospect of so vast a length, that no Eye can reach to the end of it. I plainly see the Inhabitants of the Earth, and you have made me discover those that dwell in the Moon, and in other Planets of our Vortex; now these indeed I conceive pretty plainly, but do not see so clearly as those of the Earth: after these, we come to the Inhabitants of the Planets which are in the other Vortexes, but they are sunk into so great a depth, that tho' I do all I can to see them, yet I must confess I can hardly perceive 'em. By the Expression you use in speaking of 'em, they seem to be almost annihilated; you ought then to call 'em the Inhabitants of one of those innumerable Vortexes:

We

We ourselves, for whom the same Expression serves, must confess, that we scarce know where we are, in the midst of so many Worlds; for my own part, I begin to see the Earth so fearfully little, that I believe from henceforward I shall never be concern'd at all for any thing. That we so eagerly desire to make ourselves great, that we are always designing, always troubling and harassing ourselves, is certainly because we are ignorant what these Vortexes are: but now I hope my new Lights will in part justify my Laziness; and when any one reproaches me with my Carelessness, I will answer, *Ab, did you but know what the fixed Stars are!* ---- It was not fit, *said I*, that *Alexander* should know what they were; for a certain Author*, who maintains that the Moon is inhabited, very gravely tells us, that *Aristotle* (from whom no Truth could be long conceal'd) must necessarily be of an Opinion back'd with so much Reason; but yet he never durst acquaint *Alexander* with the Secret, fearing he might run mad with Despair, when he

* HUYGENS.

knew there was another World which he could not conquer. With much more reason then was this Mystery of Vortexes and fix'd Stars kept secret in *Alexander's* time: for tho' they had been known in those days, yet a Man would have been a great Fool to have said any thing of 'em to *Alexander*; it would have been but an ill way of making his court to that ambitious Prince: for my part, I that know 'em, am not a little troubled to find myself not one jot the wiser for all the knowledge I have of 'em; the most they can do, according to your way of reasoning, is but to cure People of their Ambition, and their unquiet restless Humour, which are Diseases I am not at all troubled with: I confess, I am guilty of so much Weakness, as to be in love with what is beautiful; that's my Distemper, and I am confident the Vortexes can never cure it. What if the other Worlds render ours so very little? they cannot spoil fine Eyes, or a pretty Mouth; their Value is still the same, in spite of all the Worlds that can possibly exist.

This

This Love, *reply'd the Marchioness smiling*, is a strange thing ; let the World go how 'twill, 'tis never in danger ; there is no System can do it any harm. But tell me freely, is your System true ? Pray conceal nothing from me ; I will keep your Secret very faithfully ; it seems to have for its Foundation, but a slight Probability : which is, that if a fix'd Star be in itself a luminous Body, like the Sun, then by consequence it must, as the Sun is, be the Center and Soul of a World, and have its Planets turning round about it. But is there an absolute Necessity it must be so ? Madam, *said I*, since we are in the Humour of mingling amorous Follies with our most serious Discourse, I must tell you, that in Love and the Mathematicks, People reason much alike. Allow ever so little to a Lover, yet presently you must grant him more, nay more and more, which will at last go a great way. In like manner, grant but a Mathematician one little Principle, he immediately draws a Consequence from it, to which you must necessarily assent ; and from this Consequence

quence another, till he leads you so far (whether you will or no) that you have much ado to believe him. These two sorts of People, Lovers and Mathematicians, will always take more than you give 'em. You grant, that when two things are like one another in all visible Respects, it is possible they may be like one another in those things that are not visible, if you have not some good Reason to believe otherwise. Now this way of arguing have I made use of. The Moon, *says I*, is inhabited, because she is like the Earth; and the other Planets are inhabited, because they are like the Moon: I find the fix'd Stars to be like our Sun, therefore I attribute to them what is proper to him. You are now gone too far to be able to retreat, therefore you must go forward with a good Grace. But, *says the Marchioness*, if you build upon this Resemblance or Likeness which is between our Sun and the fix'd Stars, then, to the People of another great Vortex, our Sun must appear no bigger than a small fix'd Star, and can be seen only when 'tis Night with them.

Without

Without doubt, Madam, *said I*, it must be so: Our Sun is much nearer to us, than the Suns of other Vortexes, and therefore its Light makes a much greater Impression on our Eyes, than theirs do. We see nothing but the Light of our own Sun; and when we see that, it darkens and hinders us from seeing any other Light: But in another great Vortex, there is another Sun, which rules and governs, and in its turn extinguishes the Light of our Sun, which is never seen there but in the Night, with the rest of the other Suns, that is, the fix'd Stars: with them, our Sun is fastned to the great arched Roof of Heaven, where it makes a part of some Bear or Bull; for the Planets which turn round about it, (our Earth for example) as they are not seen at so vast a distance, so no body does so much as dream of 'em. All the Suns then are Day-Suns in their own Vortexes, but Night-Suns in other Vortexes. In his own World or Sphere every Sun is single, and there is but one to be seen; but every where else, they serve only to make a number. May
not

not the Worlds, *reply'd the Marchioness*, notwithstanding this great Resemblance between 'em, differ in a thousand other things? For tho' they may be alike in one Particular, they may differ infinitely in others.

It is certainly true, *said I*; but the Difficulty is to know wherein they differ. One Vortex hath many Planets, that turn round about its Sun; another Vortex has but a few. In one Vortex there are inferior or less Planets, which turn about those that are greater; in another, perhaps, there are no inferior Planets: here, all the Planets are got round about their Sun, in Form of a little Squadron; beyond which is a great void Space, which reacheth to the neighbouring Vortexes: in another Place, the Planets take their Course towards the Outside of their Vortex, and leave the Middle void. There may be Vortexes also quite void, without any Planets at all; others may have their Sun not exactly in their Center, and that Sun may so move, as to carry its Planets along with it; others may have
Planets,

Planets, which in regard of their Sun, ascend and descend, according to the change of their Equilibration, which keeps them suspended. In short, what Variety can you wish for? But I think I have said enough for a Man that was never out of his own Vortex.

It is not so much, *reply'd the Marchioness*, considering what a multitude of Worlds there are: what you have said is sufficient but for 5 or 6, and from hence I see thousands.

What would you say, Madam, if I should tell you, there are many more fix'd Stars than those you see? And that an infinite Number are discovered with Glasses, which cannot be seen by the naked Eye? One single Constellation, where perhaps we count only 12 or 15, there are as many more to be found as usually appear in the whole Hemisphere.

I submit, *says she*, and beg your Pardon; you quite confound me with Worlds and Vortexes. I have more to tell you, Madam, *said I*: You see that Whiteness in the Sky, which some call
the

the *Milky-way*; can you imagine what that is? 'Tis nothing but an Infinity of small Stars, not to be seen by our Eyes, because they are so very little; and they are sown so thick one by another, that they seem to be one continued Whiteness. I wish you had a Glass to see this Ant-hill of Stars, and this Cluster of Worlds, if I may so call 'em: they are in some sort, like the *Maldivian* Islands. Those twelve thousand Banks of Sand, separated by narrow Channels of the Sea, which a Man may leap as easily as over a Ditch; so near together are the Vortexes of the *Milky-way*, that the People in one World may talk and shake Hands with those of another; at least, I believe the Birds of one World may easily fly into another; and that Pigeons may be train'd up to carry Letters, as they do in the *Levant*. These little Worlds are excepted out of that general Rule, by which one Sun in his own Vortex, as soon as he appears, effaces the Light of all other foreign Suns. If you were in one of these little Vortexes of the
Milky-way,

Milky-way, your Sun would not be much nearer to you, and consequently would not make any much greater sensible Impression on your Eyes, than 100,000 other Suns of the neighbouring Vortexes. You would then see your Heaven shine bright with an infinite Number of Fires close to one another, and but a little distant from you ; so that tho' you should lose the Light of your own particular Sun, yet there would still remain visible Suns enough, beside your own, to make your Night as light as Day, at least the Difference would hardly be perceiv'd ; for the Truth is, you would never have any Night at all. The Inhabitants of these Worlds, accustomed to perpetual Brightness, would be strangely astonish'd, if they should be told, that there are a miserable sort of People, who, where they live, have very dark Nights, and when 'tis Day with them, they never see more than one Sun ; certainly they would think Nature had very little Kindness for us, and would tremble with

with Horror, to think what a sad Condition we are in.

I do not ask you, *said the Marchioness*, whether in those Worlds of the Milky-way, there be any Moons; I see they would be of no use to those principal Planets which have no Night, and move in Spaces too strait and narrow to cumber themselves with the Baggage of inferior Planets: yet pray take notice, that by your liberal Multiplication of Worlds, you have started an Objection not easily answer'd. The Vortexes whose Suns we see, touch the Vortex in which we are; and if it be true, that Vortexes are round, how then can so many Bowls or Globes all touch one single one? I would fain know how this may be done, but cannot well reconcile it.

You shew a great deal of Wit, Madam, *said I*, in raising this Doubt, and likewise in not being able to resolve it; for in itself the thing is extreme difficult, and in the manner you conceive it, no Answer can be given to it; and he must be a Fool who goes about to
find

find Answers to Objections which are unanswerable. If our Vortex had the Form of a Dye, it would have six Squares or flat Faces, and would be far from being round; and upon every one of these Squares might be plac'd a Vortex of the same Figure; but if instead of these six square Faces, it had 20, 50, or 1000, then might 1000 Vortexes be plac'd upon it, one upon every Flat: and you know very well, that the more flat Faces any Body hath on its Outside, the nearer it approacheth to Roundness; just as a Diamond cut face-wise on every Side, if the Faces be very many and little, it will look as round as a Pearl of the same Bigness. 'Tis in this manner that the Vortexes are round; they have an infinite number of Faces on their Outside, and every one of 'em has upon it another Vortex: these Faces are not all equal and alike; but here, some are greater, and there, some less: the least Faces of our Vortex, for Example, answer to the Milky-way, and sustain all those little Worlds. When two Vortexes are supported

ported by the two next Flats on which they stand, if they leave beneath any void Space between them, as it must often happen, Nature, who is an excellent Housewife, and suffers nothing to be useless, presently fills up this void Space with a little Vortex or two, perhaps with a thousand, which never incommode the others, and become one, two, or a thousand Worlds more; so that there may be many more Worlds than our Vortex has flat Faces to bear 'em. I will lay a good Wager, that tho' these little Worlds were made only to be thrown into the Corners of the Universe, which otherwise would have been void and useless; and tho' they are unknown to other Worlds which they touch, yet they are well satisfy'd with their being where they are. These are the little Worlds whose Suns are not to be discovered but with a Telescope, and whose Number is prodigious. To conclude, all these Vortexes are join'd to one another in so admirable a manner, that every one turns round about his Sun, without changing Place; every
one

Plurality of Worlds. 141

one has such a Turn as is most easy and agreeable to its own Situation; they take hold of one another like the Wheels of a Watch, and mutually help one another's Motion: and yet 'tis certain that they act contrary to one another. Every World, as some say, is like a Foot-ball, made of a Bladder, cover'd with Leather, which sometimes swells of its own accord, and would extend itself if it were not hinder'd. But this swelling World being press'd by the next to it, returns to its first Figure; then swells again, and is again depress'd: and some affirm, that the Reason why the fixed Stars give a twinkling and trembling Light, and sometimes seem not to shine at all, is because their Vortexes perpetually push and press our Vortex, and ours again continually repulses theirs.

I am in love with these Fancies, *said the Marchioness*; I am pleas'd with these Foot-balls, which swell every Moment, and sink again, and with these Worlds, which are continually striving and pushing one another: but above all, I am
pleas'd

pleas'd to see how this juggling keeps up the Trade of Light, which is certainly the only Correspondence that is between them.

No, no, Madam, *said I*; Light is not their sole Commerce; the neighbouring Worlds sometimes pay Visits to us, and that in a very magnificent and splendid manner: There come Comets to us from thence, adorn'd with bright shining Hair, venerable Beards, or Majestick Tails. These, *said she*, are Ambassadors, whose Visits may be well spared, since they serve only to affright us. They scare only Children, *said I*, with their extraordinary Train; but indeed, the number of such Children is now-a-days very great. Comets are nothing but Planets, which belong to a neighbouring Vortex, they move towards the outside of it: but perhaps this Vortex being differently press'd by those Vortexes which encompass it, 'tis rounder above than it is below, and it is the lower part that is still towards us. These Planets which have begun to move in a Circle above, are aware that below
their

their Vortex will fail 'em, because it is as it were broken: Therefore, to continue the circular Motion, it is necessary that they enter into another Vortex, which we will suppose is ours, and that they cut through the outsides of it. They appear to us very high, and are much higher than *Saturn*; and according to our System, it is absolutely necessary they should be so high, for Reasons that signify nothing to our present Subject. From *Saturn* downwards to the other side of our Vortex, there is a great void space without any Planets. Our Adversaries often ask us, to what purpose this void Space serves? But let them not trouble themselves any more; I have found a use for it: 'Tis the Apartment of those strange Planets, which come into our World.

I understand you, *says she*; we do not suffer them to come into the Heart of our Vortex, among our own Planets, but we receive them as the *Grand Signior* does the Ambassadors that are sent to him; he will not shew them so much Respect, as to let 'em lodge in *Constantinople*,

tinople, but quarters 'em in one of the Suburbs of the City. Madam, *said I*, we and the *Ottomans* agree likewise in this, that as they receive Ambassadors, but never send any, so we never send any of our Planets into the Worlds that are next us.

By this, *says she*, it appears, that we are very proud; however, I do not yet very well know what I am to believe. These foreign Planets, with their Tails and their Beards, have a terrible Countenance, it may be they are sent to affront us; but ours that are of another make, if they should get into other Worlds, are not so proper to make People afraid.

Their Beards and their Tails, Madam, *said I*, are not real, they are *Phænomena*, and but mere Appearances. These foreign Planets differ in nothing from ours; but entering into our Vortex, they seem to us to have Tails or Beards, by a certain sort of Illumination which they receive from the Sun, and which has not been yet well explain'd. But certain it is, that 'tis but a kind of Illumination;

mination; and when I am able, I will tell you how 'tis done. I wish then, *says she*, that our *Saturn* would go take a Tail and a Beard in another Vortex, and affright all the Inhabitants of it. That done, I would have him come back again, leaving his terrible Accoutrements behind him, and taking his usual place amongst our other Planets, fall to his ordinary Business. 'Tis better for him, *said I*, not to go out of our Vortex. I have told you how rude and violent the shock is, when two Vortexes jostle one another; a poor Planet must needs be terribly shaken, and its Inhabitants in no better Condition. We think ourselves very unhappy when a Comet appears; but 'tis the Comet that is in an ill Case. I do not believe that, *says she*; it brings all its Inhabitants with it in very good Health; there can be nothing so diverting as to change Vortexes. We that never go out of our own Sphere, lead but a dull Life. If the Inhabitants of a Comet had but the Wit to foresee the time when they are to come into our World, they who had already made the Voyage,

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would

would tell their Neighbours before-hand what they would see ; they would tell them, that they would discover a Planet with a great Ring about it, meaning our *Saturn* ; they would also say, you shall see another Planet which has four little ones to wait on it : and perhaps some of them, resolv'd to observe the very Moment of their Entrance into our World, would presently cry out, *A new Sun, a new Sun !* as Sailors use to cry, *Land, Land !*

You have no Reason then, *said I*, to pity the Inhabitants of a Comet ; yet I suppose you will think their Condition lamentable, who inhabit a Vortex, whose Sun comes in time to be quite extinguish'd, and consequently live in eternal Night. How ! *cry'd the Marchioness*, can Suns be extinguish'd ? Yes, without doubt, *said I* ; for People some thousand Years ago saw fixed Stars in the Sky, which are now no more to be seen ; these were Suns which have lost their Light, and certainly there must be a strange Defolation in their Vortexes, and a general Mortality over all the
Planets :

Planets: for what can People do without a Sun? This is a dismal Fancy, *said the Lady*, I would not if I could help it, let it come into my Head. I will tell you, if you please, *I reply'd*, what in this Particular is the Opinion of learned Astronomers. They think, that the fixed Stars which have disappear'd, are not quite extinguish'd, but that they are half Suns, that is, they have one half dark, and the other half light; and turning round upon their own Axis or Center, they sometimes shew us their light side, and afterwards turning to us their dark side, we see them no more. To oblige you, Madam, I will be of this Opinion, because it is not so harsh as the other; but I cannot make it good, but in relation to some certain Stars; because, as *Huygens* has lately observ'd, those Stars have their regulated times of appearing and disappearing, otherwise there could be no such thing as half Suns. But what shall we say of Stars, which totally disappear, and never shew themselves again after they have finish'd their Course of turning round

upon their own Axis? You are too just, Madam, to oblige me to believe, that such Stars are half Suns. However, I will try once more what I can do in favour of your Opinion: The Suns are not extinct, they are only sunk so low into the immense Depth of Heaven, that we cannot possibly see them: in this case the Vortex follows his Sun, and all's well again. 'Tis true, that the greatest part of the fixed Stars have not this Motion, by which they remove themselves so far from us, because at other times they might return again nearer to us, and we should see them sometimes greater, and sometimes less, which never happens. But we will suppose that none but the little, light, and most active Vortexes, which slip between the others, make certain Voyages, after which they return again, while the main Body of Vortexes remain unmov'd. 'Tis likewise very strange, that some fixed Stars shew themselves to us, spending a great deal of time in appearing and disappearing, and at last totally and entirely disappear. Half Suns would appear again at their set and regulated

regulated time. But Suns which should be sunk low into the Depths of Heaven, would disappear but once, and not appear again for a vast space of Time. Now, Madam, boldly declare your Opinion: Must not these Stars of necessity be Suns, which are so much darkned, as not to be visible to us, and yet afterwards shine again, and at last are wholly extinct? How can a Sun, *said the Marchioness*, be darkned, and quite extinguish'd, when it is in its own Nature a Fountain of Light? It may be done, Madam, *said I*, with all the ease in the World, if *Descartes's* Opinion be true, that our Sun has Spots: now, whether these Spots be Scum or thick Mists, or what you please, they may thicken and unite, till at last they thicken the Sun with a Crust, which daily grows thicker, and then farewell Sun. We have hitherto 'scap'd pretty well; but 'tis said, that the Sun for some whole Years together has look'd very pale: for Example, the Year after *Cæsar's* Death, it was this Crust that then began to grow; but the Force of the Sun broke and dissipated it: had it

continued, we had been all lost People. You make tremble, *reply'd the Lady*. And now I know the fatal Consequences of the Sun's Paleness, I believe, instead of going every Morning to my Glass, to see how I look, I shall cast my Eyes up to Heaven, to see whether or no the Sun looks pale. Oh, Madam, *said I*, there is a great deal of time required to ruin a World. I grant it, *said she*; yet 'tis but time that is requir'd. I confess it, *said I*; all this immense Mass of Matter, that composes the Universe, is in perpetual Motion, no part of it excepted: And since every part is moved, you may be sure that Changes must happen sooner or later; but still in times proportion'd to the Effect. The Antients were pleasant Gentlemen, to imagine that the celestial Bodies were in their own Nature unchangeable, because they observed no change in them; but they did not live long enough to confirm their Opinion by their own Experience; they were Boys in comparison of us. Give me leave, Madam, to explain myself by an Allegory: If Roses, which last but a Day,

could

could write Histories, and leave Memoirs one to another; and if the first Rose should draw an exact Picture of his Gardener, and after fifteen thousand Rose-Ages, it should be left to other Roses, and so on still to those that should succeed without any change in it; should the Roses hereupon say, we have every Day seen the same Gardener, and in the memory of Roses none ever saw any Gardener but this, he is still the same he was; and therefore certainly he will not die as we do, for there is no Change at all in him: Would not these Roses, Madam, talk very foolishly? And yet there would be more Reason in their Discourse, than there was in what the Antients said concerning celestial Bodies; and tho' even to this very Day there should appear no visible Change in the Heavens, and the Matter of which they are made should have all the Signs of an eternal Duration, without any change; yet I would not believe them unchangeable, till I had the experience of many more Ages. Ought we, whose Lives are but a Span, to make our Continuance

the Mensuration of any other Being? 'Tis not so easy a Matter to be eternal. To have lasted many Ages of Men, one after another, is no Sign of Immortality. Truly, *says the Marchioness*, I find the Worlds are far from being able to pretend to it; I will not do them so much honour as to compare them to the Gardener who lived so much longer than the Roses. I begin to think them like the Roses themselves, which blow one Day, and die the next: For now I understand, that if old Stars disappear, new ones will come in their room, because every Species must preserve itself. No Species, Madam, *said I*, can totally perish; some perhaps will tell you, that such new Stars are Suns, which return to our sight again, after they have been a long time hid from us in the Profundity of Heaven: Others may tell you, they are Suns cleared from that thick Crust, which once covered them. If I should think all this possible, yet I likewise believe that the Universe may be fram'd in such a manner, that from time to time it may produce new Suns. Why may not that

Matter,

Matter, which is proper to make a Sun, be dispers'd here and there, and gather itself again at long run into one certain Place, and lay the Foundation of a new World? I am very much inclin'd to believe such new Productions, because they suit with that glorious and admirable Idea which I have of the Works of Nature. Can we think that all-wise Nature knows no more than the Secret of making Herbs and Plants live and die by a continual Revolution? I am verily persuaded, (and are not you so too, Madam?) that Nature, without much Cost or Pains, can put the same Secret in Practice upon the Worlds. I now find, *says she*, the Worlds, the Heavens, and celestial Bodies so subject to change, that I am come to myself again. To recover ourselves the better, *I reply'd*, let us say no more of these Matters. We are arriv'd at the very Roof and Top of all the Heavens; and to tell you whether there there be any Stars beyond it, you must have an abler Astronomer than I am: You may place Worlds there, or no Worlds, as you please. 'Tis

the Philosopher's Empire to describe those vast invisible Countries, which are, and are not, or are such as he pleases to make 'em: It is enough for me to have carried your Mind as far as you can see with your Eyes.

Well, *says the Marchioness*, I have now in my head the whole System of the Universe. How learned am I become! Indeed, Madam, *said I*, you are pretty knowing; and you are so with the Advantage of believing, or not believing any thing I have said. For all my Pains I only beg this Favour, that whenever you look on the Sun, the Heaven, or the Stars, you will think of me.





The Sixth Evening.

New Observations *confirming the*
Preceding Ones. *And some*
farther Discoveries made in
the Heavens.

'TIS so long since the Marchioness and I had any Discourse concerning the *Planetary Worlds*, that we began to question whether we had ever talk'd on that Subject. I went one Day to visit her, and came in just as two very polite Gentlemen had taken their Leaves of her. Well! *says Madam, the very Moment she perceived me,* you see what Visitors I have had; and, I protest, it has given me some room to suspect it has been in your Power to impose upon my Judgment. I should be very proud, *reply'd I,* if I

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could flatter myself with such a Power, because I look upon it to be the hardest Task any one could attempt. As hard as it is, *says she*, I am afraid you have done it. I know not how it came about, but our Conversation turn'd upon the *Plurality of Worlds* with my two Friends who are just gone: I am not certain, but they might introduce the Discourse with a malicious Design. I made no Sctuple to tell them directly, that all the Planets were inhabited; one of them reply'd, he was very well satisfy'd I did not believe a Word of it; and I, with all the Simplicity imaginable, maintain'd, it was my real Opinion: he still look'd upon it as a piece of Dissimulation, design'd to divert the Company; and I thought, what made him so positive that I did not believe my own Sentiments, was, that he had too high an Opinion of me to conceive that I could entertain so extravagant a Notion. As for the other Gentleman, who had not altogether that Esteem for me, he took me at my Word. For God's sake, why did you put a Thing
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in my Head, which People that value me cannot think I maintain seriously? Nay, Madam, *says I*, but why would you attempt to maintain any serious Position among a Set of People, who, I am sure, never entered into a Way of Reasoning which had the least Cast of Seriousness? We should not affront the Inhabitants of the Planets so highly; but content ourselves with being a little select Number of Advocates for them, and not communicate our Mysteries to the Vulgar. How! *says the Marchioness*, do you call my two last Visitants the *Vulgar*? They may have Wit enough, *says I*, but they never Reason at all. And your Reasoners, who are a severe Set of People, will not make any Difficulty of sorting them with the Vulgar. On the other Hand, these Men of Fire revenge themselves by ridiculing the Reasoners; and think it is a very just Principle in Nature, that every Species despises what it wants. It were right, if it was possible, to conform ourselves to every Species; and it had been much better for

for you to have rallied on the Inhabitants of the Planets with your two Friends, because they are better at Railery than Reasoning, which they never make Use of: You had then come off with their joint Esteem; and the Planets had not lost a single Inhabitant by it. Would you have had me, *says she*, sacrifice the Truth to a Jest? And is that all the Conscience you have? I own, *answer'd I*, that I have no great Zeal for these kind of Truths, and I will sacrifice them with all my Soul to the least Conveniencies of Company. For Instance, I see what is, and always will be, the Reason why the Opinion of the Planets being inhabited, is not thought so probable as it really is: The Planets always present themselves to our View as Bodies which emit Light; and not at all like great Plains and Meadows. We should readily agree that Plains and Meadows were inhabited; but for luminous Bodies to be so too, there is no Ground to believe. Reason may come and tell us over and over, that there are Plains and Meadows in these Planets,

Planets; but Reason comes a Day too late; one Glance of our Eyes has had its Effect before her, we will not hear a Word she says; the Planets must be luminous Bodies, and what Sort of Inhabitants they should have, our Imagination of Course would presently represent their Figures to us. It is what she cannot do, and the shortest Way is to believe there are no such Beings. Would you have me, for the Establishment of these Planetary People, whose Interests are far from touching me, go to attack those formidable Powers, call'd *Sense* and *Imagination*? It is an Enterprize would require a good Stock of Courage, and we cannot easily prevail on Men, to substitute their Reason in the Place of their Eyes. I sometimes meet with reasonable People, who are willing, after a thousand Demonstrations, to believe that the Planets are so many Earths: But their Belief is not such as it would be, if they had not seen them under a different Appearance; they still remember the first Idea they entertained, and cannot well

well recover themselves from it. It is these kind of People, who, in believing our Opinion, seem to do it a Courtesy, and only favour it for the sake of a certain Pleasure which its Singularity gives them.

Well, *says the Marchioness*, interrupting me, and is not this sufficient for an Opinion, which is but barely probable? You would be very much surprized, *says I*, if I should tell you, *probable* is not a very modest Term. Is it simply probable that there ever was such a Man as *Alexander* the Great? You hold it very certain that there was; and upon what is this Certainty founded? Because you have all the Proofs which you could desire in a like Matter? and there does not the least Subject for Doubt present itself, to suspend or arrest your Determination? For you never could see this *Alexander*, and you have not one Mathematical Demonstration that there ever was such a Man. Now what would you say if the Inhabitants of the Planets were almost in the very same Case? We cannot pretend to
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make you see them, and you cannot insist upon the Demonstration here, as you would in a Mathematical Question. But you have all the Proofs you could desire in our World: The entire Resemblance of the Planets with the Earth which is inhabited, the Impossibility of conceiving any other Use for which they were created, the Fecundity and Magnificence of Nature, the certain Regards she seems to have had to the Necessities of their Inhabitants, as in giving Moons to those Planets remote from the Sun, and more Moons still to those yet more remote; and what is still very material, there are all Things to be said on one Side, and nothing on the other; and you cannot comprehend the least Subject for a Doubt, unless you will take the Eyes and Understanding of the Vulgar. In short, supposing that these Inhabitants of the Planets really exist, they could not declare themselves by more Marks, or Marks more sensible; and after this you are to consider whether you are willing not to take their Case to be
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more than purely probable. But you would not have me, *says she*, look upon this to be as certain as that there was such a Man as *Alexander*? Not altogether, Madam, *says I*; for tho' we have as many Proofs touching the Inhabitants of the Planets, as we can have in the Situation we are, yet the Number of these Proofs is not great. I must renounce these Planetary Inhabitants, *said her Ladyship, interrupting me*, for I cannot conceive how to rank them in my Imagination; there is no absolute Certainty of them, and yet there is more than a Probability; so that I am confounded in my Notions. Ah, Madam, *says I*, never put yourself out of Conceit with them for that; the most common and ordinary Clocks shew the Hours, but those are wrought with more Art and Nicety which shew the Minutes. Just so your ordinary Capacities are sensible of the Difference betwixt a simple Probability, and an evident Certainty; but it is only your fine Spirits that discern the exact Proportions of Certainty or Probability, and can

mark,

mark, if I may use the Phrase, the Minutes in their Sentiments. Now place the Inhabitants of the Planets a little below *Alexander*; yet above many other Historical Facts which are not so clearly proved: I believe this Position will do. I love Order, *says she*, and you oblige me in thus ranging my Ideas for me: But pray, why did not you take this Care before? Because, *says I*, should you believe the Inhabitants of the Planets either a little more or less than they deserve, there will be no great Damage in it. I am sure that you do not believe the *Motion* of the *Earth* so fully as it ought to be believed; and have you much Reason to complain on that Score? O! for that matter, *replies she*, I have discharged myself very well, you have nothing to reproach me with on that Account, for I firmly believe that the *Earth* turns. And yet, *says I*, Madam, I have not given you the strongest Reasons in proving it. Ah! Traitor, *she cried*, to make me believe Things upon feeble Proofs! Then you did not think me worthy of believing

believing upon substantial Reasons? I only proved Things, *says I*, upon little plausible Reasons, and such as were adapted to your peculiar Use: Should I have conjured up as strong and solid Arguments, as if I had been to attack a Doctor in the Science? Yes, *says she*, pray take me for a Doctor from this Moment, and let me have your full Demonstrations of the *Earth's* moving.

With all my Heart, *says I*, Madam, and I own the Proof pleases me strangely, perhaps because I think it was of my own finding; yet it is so good and natural, that I must not presume positively to have been the Inventor of it: It is most certain, that if a learned Man was puzzled, and desired to make Replications to it, he would be obliged to declaim at large, which is the only Method in the World to confound a learned Man. We must grant, that all the *Celestial Bodies*, in 24 Hours, turn round the *Earth*, or that the *Earth* turning on itself, imparts this Motion to all the *Celestial Bodies*.
But

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But that they really have this Revolution in 24 Hours round the *Earth*, is a Matter which has the least Probability in the World, tho' the Absurdity does not presently appear to our View. All the Planets certainly make their great Revolution about the *Sun*; but these Revolutions of theirs are unequal, according to the Distances of the respective *Planets* from the *Sun*; for the most remote Ones make their Course in a longer Time, which is most agreeable to Nature: The same Order is observed among the little secondary Planets in turning about a great one. The four *Moons* of *Jupiter*, and the five of *Saturn*, make their Circles in more or less Time round their great Planet, according as they are more or less remote. Besides, it is certain that the Planets have Motions upon their own Centers, and these Motions likewise are unequal. We cannot well tell how to account for this Inequality, whether it proceeds from the different Magnitudes of the Planets, or on the different Swift-ness of the particular *Vortexes* which inclose

inclose them, and the liquid Matters in which they are sustained ; but, in short, the Inequality is most undoubted ; and such is the Order of Nature in general, that whatever is common to many Things, is found at the same Time to vary in some different Particulars.

I understand you, *says the Marchioness, interrupting me*, and I think, there is a great deal of Reason in what you say ; I am entirely of your Mind, if the *Planets* turned about the *Earth*, they would do it in unequal Spaces of Time, according to their Distances, as they do about the *Sun* : Is not that the Meaning of what you were saying ? Exactly, *Madam, says I* ; their unequal Distances with respect to the *Earth*, their different Magnitudes, and the different Rapidity of the particular *Vertices* inclosing them, should consequently produce Differences in their pretended *Motion* round the *Earth*, as well as in all their other *Motions* : And the *fixed Stars*, which are at such a prodigious Distance from us, and so much elevated above every Thing that can
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take a general Motion round us, at least which are situated in a Place whence this Motion should be very much weakned; would there not be a very great Probability that they did not turn at all about us in 24 Hours, as the *Moon* does who is so near us? And should not *Comets*, which are Strangers in our *Vortex*, and which run Courses so different one from the other, and with such unequal Rapidity, be excused from turning round us in the same Space of 24 Hours? But no Matter, *fixed Stars*, and *Comets*, and all must turn round the *Earth* in 24 Hours; yet, if there were some Minutes Difference in these Motions, we might be contented; and they all must make them with the most exact Equality, or rather the only exact Equality which is in the World, and not one Minute more or less allowed. In Reality, this Matter is strangely to be suspected.

O! says the *Lady*, since it is possible that this grand Equality should be only in our Imagination, I am intirely convinced

vinced it is derived only from thence. I am very well pleased, that any Position, which is against the Genius of Nature, should fall entirely upon ourselves, and that she should stand discharged, tho' at our Expence. For my Part, *says I*, I am such a Foe to a perfect Equality, that I cannot even allow all the Turns which the Earth every Day makes on herself should be precisely in 24 Hours, and always equal one to another; I should be very much inclined to think that there are Variations. Variations! *cried the Lady*; why, do not our Pendulums mark an entire Equality? O, *says I*, to your Pendulums I must object, for they cannot be altogether just; and sometimes when they are, in shewing us that one Circuit of 24 Hours is longer or shorter than another, we should rather be inclined to believe them irregular, than to suspect the Earth of any Irregularity in her Revolutions. What a complaisant Respect is this we have for her! I would no more depend on the *Earth*, than on a *Pendulum*; And the very same Casualties

faulties almost which will disorder the one, will make the other irregular! Only, I believe there must be more Time allowed for the *Earth*, than a *Pendulum*, to be visibly put out of Order; and that is all the Advantage we can give on her Side. But might she not by Degrees draw nearer to the *Sun*? And there finding herself in a Situation, where the Matter is more agitated, and the Motion more rapid, she will in less Time make her double Revolution both about the *Sun* and herself; so consequently her Years and Days will be much shortned, but not to be perceived, because we must still go on to divide the Year into 365 Days, and the Day into 24 Hours: So that without living longer than we now do, we shall live more Years; and on the other Hand, as the *Earth* withdraws from the *Sun*, we shall live fewer Years than we do now, and yet have our lives of the same Extent. There is a great deal of Probability, *says she*, that whenever it falls out thus, long Successions of Ages will make but very little variation

tion. I agree with you, Madam, *replied I*, the Conduct of Nature is very nice, and she has a Method of bringing about all Things by Degrees, which are not sensible, but in very obvious and easy Changes; We are scarce able to perceive the Change of the Seasons and for some others which are made with a certain Deliberation, they do not fail to escape our Observance. However, all is in a perpetual Rotation, and not so much as the Lady's Face in the *Moon*, which was discovered with Telescopes, within these 40 Years, but what is grown considerably old. She had a good tolerable Countenance, but now her Cheeks are sunk, her Nose grown long, and her Chin and Forehead meet, so that all Graces are vanished, and Age has made her a terrible Spectacle.

What a Story do you tell, says the *Lady*, interrupting me! It is no Imposition, *Madam, replied I*, they have perceived in the *Moon* a particular Figure, which had the Air of a Woman's Head jutting out of Rocks, and it is owing to some Changes that have happened

pened there. Some Pieces of Mountains have mouldered away, and left us to discover three Points, which can only serve to make up the Forehead, Nose, and Chin, of an old Woman. Well, *says she*, but do not you think it is some Destiny that had a particular Spite to Beauty? And very justly it was this Female-Head, which she would attack above all the *Moon*. Perhaps in Recompence, *replied I*, the Changes which happen upon our *Earth*, dress out some Face, which the *People* in the *Moon* see; I mean something like what we conceive a *Face* in the *Moon*; for every one bestows on Objects those Ideas of which they themselves are full. Our Astronomers see on the Surface of the *Moon*, the Faces of Women, and may be, if the Ladies were to make their Speculations, they would discern the Physiognomy of fine Men. For my Part, *Madam*, I do not know whether I should not fancy your Ladyship's Charms there. I protest, *says she*, I cannot help being obliged to any one who should find me there. But to come

back to what you were mentioning just now: Do any considerable Changes affect the Earth? In all Appearance they do, *replied I*: Old Fables tell us, that *Hercules* split asunder with his Hands, the two Mountains, called *Calpe* and *Abila*, which stand betwixt *Afric* and *Spain*, stopped the Ocean from flowing there, and that immediately the Sea rushed with Violence over the Land, and made that great Gulph which we call the *Mediterranean*. Now this is not only fabulous, but a History of those remote Times, which has been disguised, either from the *Ignorance* of the *People*, or thro' the *Love* they had for the *Marvellous*, the most ancient Frailties of Mankind. That *Hercules* should separate two Mountains with his two Hands, is absolutely incredible; but that in the Time of one *Hercules*, or other, for there were 50 of that Name, the Ocean should force down two Mountains, not so strong as others in the World, perhaps thro' the Assistance of some Earthquake, and so take his Course
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betwixt *Europe* and *Afric*, gives me no Pain to believe. What a notable Spot might the *Lunar-Inhabitants* all of a sudden discover on our Earth; for you know, *Madam*, that Seas are Spots. It is no less than the common Opinion, that *Sicily* was separated from *Italy*, and *Cyprus* from *Syria*: There are sometimes new Islands formed in the Seas: Earthquakes have swallowed up Mountains, others have rose and altered the Course of the Planets. The Philosophers give us Apprehensions that the Kingdoms of *Naples* and *Sicily*, which are Countries founded upon great subterranean Vaults, full of Sulphur, which will one Day sink in, when those Vaults shall no longer be able to resist the Flames which they contain, and at this Time exhale at those Vent-holes the Mouths of *Vesuvius* and *Aetna*. Is not here enough to diversify the Sight which we give to the *People* in the *Moon*?

I had much rather, *says the Marchioness*, that we had disgusted them with the same Object always than di-

verted them with the swallowing up of Provinces.

I do not know, *replied I*, if within this little Time there have not been several burnt up in *Jupiter*. What, Provinces burnt up in *Jupiter*! *crys she*, upon my Word, that would be considerable News. Very considerable, *says I, Madam*: We have remarked these 20 Years in *Jupiter* a long Trail of Light, more glaring than the rest of that Planet's Body. We have, here, had Deluges, perhaps they may have suffered great Conflagrations in *Jupiter*: How do we know to the contrary? *Jupiter* is 90 Times bigger than the *Earth*, and turns on his own Center in 10 Hours, whereas we do not turn in less than 24, which implies that his Motion is 216 Times stronger than ours. May it not be possible, that in so rapid a Circulation, its most dry and combustible Parts should take fire, as we see the Axle-trees in Wheels, from the Rapidity of their Motions, will break out into Flames? But however it is, this Light of *Jupiter* is by

no

no means comparable to another, which in all Probability is as ancient as the World, and yet we have never seen it. How does a Light order it to be conceal'd, *says she*; there must be some singular Address to compass that Point.

This Light, *replied I*, never appears but at Twilight, which is often strong enough to drown it; and even when Twilight suffers it to appear, either the Vapours of the Horizon rob us of it, or it is so very faint, and hardly to be perceived, that for want of Exactness in our Knowledge, we mistake it for the Twilight. But in short, they have of late years with much Certainty distinguished it; and it has been for some Time the Delight of the Astronomers, whose Curiosity wanted to be roused by some Novelty, and they could not well have been more touched if they had discovered some new secondary Planets. The two latter *Moons* of *Saturn*, for Instance, did not ravish them to that Degree which the Guards or *Moons* of *Jupiter* did: But now we are fully accustomed to it; we see, one

Month before, and after, the Vernal Equinox, when the *Sun* is set and the Twilight over, a certain whitish Light resembling the Tail of a Comet. We see the same before *Sun* rise, and before the Twilight, towards the Autumnal Equinox; and towards the Winter Solstice we see it Night and Morning, except at these Times it cannot, as I but now observed, disengage itself from the Twilights, which are too strong and lasting; for we suppose it to be a continued Light, and in all Probability it is so. We have begun to conjecture that it is produc'd from some prodigious Quantity of Matter crouded together, which circles round the *Sun* to a certain Extent: The greatest Part of his Rays pierce thro' this gross Circuit, and come down to us in a right Line; but some resting on the inner Surface of this Matter, are from thence reflected to us, and come with the direct Rays, or else we cannot have them either Morning or Evening. Now as these reflected Rays are shot from a greater Height than those
which

which are direct, we must consequently have them sooner, and keep them longer.

On this Foot, I must acquiesce in what I have already mentioned, that the *Moon* must have no Twilight for want of being surrounded by such a gross Air as the *Earth*. But she can be no Loser; her Twilights will proceed from that kind of gross Air which surrounds the *Sun*, and reflects his Rays on Places which his direct one cannot reach. But pray let me know, *says the Marchioness*, are not these Twilights settled for all the Planets, who will not need every one to be clothed with a distinct gross Air, because that which surrounds the *Sun* alone, may have one general Effect for all the *Planets* in the *Vortex*? I am mighty willing to think Dame-Nature, a greeable to that Inclination which I know she has to Oeconomy; and good Management, should make that single Means answer her Purpose: Yet, *replied I*, notwithstanding this supposed Oeconomy, she must have, with Respect

to our *Earth*, two Causes for Twilight; one whereof, which is the thick Air about the *Sun*, will be wholly useless, and can only be an Object of Curiosity for the Students of the *Observatory*; but not to conceal any Thing, it is possible that only the *Earth* sends out from herself Vapours and Exhalations gross enough to produce Twilights, and that Nature had Reason to provide, by one general Means, for the Necessities of all the other *Planets*, which are, if I may so say, of a purer Mold, and their Evaporations consequently more subtle. We are perhaps, among all the Inhabitants of the *Worlds* in our *Vortex*, the only Persons who required to have a more gross and thick Air given us to breathe in. With what Contempt would the Inhabitants of the other Planets consider us, if they knew this?

They would be out in their Reasoning, says the *Marchioness*, we are not to be despised for being enveloped with a thick Air, since the *Sun* himself is so surrounded. Pray tell me, is not this
Air

Air produced by certain *Vapours*, which you have formerly told me issued from the *Sun*, and does it not serve to break the first Force of his Rays, which had else probably been to Excess? I conceive that the *Sun* may be veiled by Nature, to be more proportioned to our Use. Well, *Madam*, replied I, this is some small *Introduction* to a *System* which you have very happily started. We may add, that these *Vapours* produce a kind of *Rain*, which falling back upon the *Sun*, may cool and refresh it, as we sometimes throw Water into a Forge, when the Fire is too fierce. There is not any Thing but what we may imagine, to assist Nature's Address, but she has another kind of Address very particular, which is to conceal herself from us, and we should not willingly be confident that we have found out her Method of acting on her Designs in it: In case of new Discoveries, we should not be too importunate in our Reasonings, tho' we are always fond enough to do it; and your *true Philosophers* are like *Elephants*,
who

who as they go, never put their second Foot to the Ground, 'till their first be well fixed. The Comparison seems the more rational to me, *says she*, as the Merit of those two Species of Animals, *Elephants* and *Philosophers*, does not at all consist in exterior Agreements. I am willing to mistake the Judgment of both; now teach me some of the latter Discoveries, and I promise you not to make any rash Systems.

I will tell you, *Madam, replied I*, all the News I know from the Firmament, and I believe the freshest Advices you can have. I am sorry they are not as surprizing and wonderful, as some Observations which I read the other Day in *An Abridgment of the CHINESE ANNALS*. Written in *Latin*. Those People see *Thousands of Stars* at a Time, *fall* from the *Sky* into the *Sea*, with a prodigious Noise, or are dissolved, and melt into Rains; and these are Things which have been seen more than once in *China*. I met with this Observation at

two

two several Times, pretty distant from each other, without reckoning a certain *Star* which goes *Eastward*; and bursts like a Squib, always with a great noise. It is great Pity that these Kinds of *Phænomena* should be reserv'd for *China* only, and that our Part of the Globe should never have their Share of these Sights. It is not long, since all our Philosophers were of Opinion, that they might affirm on good Grounds, that the *Heavens* and all the *Celestial Bodies* were incorruptible, and therefore incapable of Change; and yet at the same Time, there were some Men in the other Part of the *Earth* who saw Stars *dissolve* by *Thousands*, which must produce a very different Opinion. But, *says the Marchioness*, did we ever hear it allowed that the *Chinese* were such great Astronomers? It is true, we did not, *says I*, but the *Chinese* have an Advantage from being divided from us by such a prodigious Tract of *Earth*, as the *Greeks* had over the *Romans*, by being so much prior in Time: Distances of every

every sort pretend a Right of imposing on us. In reality, I think still more and more, that there is a certain *Genius* which has never yet been out of the Limits of *Europe*, or at least not much beyond them; perhaps he may not be permitted to spread over any great Extent of the Earth at once, and that some Fatality prescribes him very narrow Bounds. Let us indulge him whilst we have him; the best of it is, he is not link'd to the Sciences and dry Speculations, but launches out with as much Success into Subjects of Pleasure, in which Point I question whether any People equal us. These are such Topics, Madam, as ought to give you Entertainment, and compleat your whole *System of Philosophy*.





AN
ORATION,
IN
DEFENCE
OF THE
NEW PHILOSOPHY.

SPOKEN

In the THEATRE at Oxford, July 7, 1693,
by Mr. ADDISON.

Done from the *Latin* Original.



OW long, Gentlemen of the
University, shall we slavishly
tread in the Steps of the An-
cients, and be afraid of being
wiser than our Ancestors?
How long shall we religiously worship
the

the triflings of Antiquity as some do old Wives Stories? It is indeed shameful, when we survey the *great Ornament* of the present Age*, to transfer our Applauses to the Ancients, and to take pains to search into Ages past for Persons fit for Panegyrick.

The ancient Philosophy has had more allowed than it could reasonably pretend to; how often has SHALDON's Theatre rung with *Encomia* on the *Stagyrite*, who, greater than his own *Alexander*, has long, un-opposed, triumphed in our School Desks, and had the whole World for his Pupils. At length rose CARTESIUS, a happier Genius, who has bravely asserted the Truth against the united Force of all Opposers, and has brought on the Stage a new Method of Philosophizing. But shall we stigmatize with the Name of Novelty that Philosophy, which, tho' but lately revived, is more ancient than the *Peripatetic*, and as old as the Mat-

* NEWTON,

ter from whence it is derived. A great Man indeed He was, and the only one we envy FRANCE *. He solved the Difficulties of the Universe, almost as well as if he had been its Architect. He destroyed those Orbs of glass, which the Whims of Antiquity had fixed above, brought to light that Troop of Forms till then unknown, and has almost extinguished the Element of Fire; nay he with so much clearness traced out the whole Mass of Matter, as to leave no occult Quality untouched. This Philosopher scorned to be any longer bounded within the Streights and Chrystalline Wall of an *Aristotelic* World; no, his Delight is to search the Regions above, to discover new Suns, and new Worlds, which lay hid among the Stars; his Satisfaction is to view that large Kingdom of Air amidst the unfixed Stars, and Lands that pass the Milky Way, and more accurately measure this vast Machine, a Machine

* *Des Cartes.*

fit for Mankind to Philosophize on, and worthy of the Deity, that first framed it.

Here we have not only new Heavens opened to us, but we look down on our Earth; this Philosophy affords us several Kinds of Animals; where, by the Help of Microscopes, our Eyes are so far assisted, that we may discern the Productions of the smallest Creatures, while we consider with a curious Eye the animated Particles of Matter, and behold with Astonishment, the reptile Mountains of living Atoms. Thus are our Eyes become more penetrating by modern Helps, and even that work which Nature boasts for her Master-Piece, is rendered more correct and finished. We no longer pay a blind Veneration to that barbarous *Peripatetic*-Jingle, those Scholastic Terms of Art, once held as Oracles, but consult the Delicates of our own Senses, and by late invented Engines force Nature herself to discover plainly her most valued Secrets, her most hidden Re-cesses.

By

By the Help of Instruments like these, that Air, with which bountiful Nature has indulged us, we as often as we please, by the Force of Art, abridge other Animals of, and keep them in our Pneumatick Pumps, from its common Benefit: What a Pleasure is it to see the fruitless Heavings of the Lights, to exhaust their Lives, and by a most artful Sort of Theft rob them of their Breath? From this nothing is safe, nothing so long lived, which gradually does not languish, and fall dead without a Wound. A divine Piece of Art this, and worthy its Author *, who in the Conduct of his Life, and the Force of his Arguments, has so nobly honoured our Nation, and the new Philosophy; one who for this Reason too deserves never to want the Benefit of his own Air, or that he, who has so often deprived other Animals of their Life, should ever breathe out his own.

* BOYLE.

OR

On no such Grounds, as these has **ARISTOTLE** built his Philosophy, who from his own Brain furnished out all his Rules of Arts and Sciences, and left nothing untouched on, nothing unregarded but *Truth*. If therefore he precipitated himself into the River *Euripus*, because he could not understand its Ebb and Flow, by the same Logic he might at his first Entrance on Philosophy have destroyed himself, and we may fairly doubt, in which of the Elements he ought to have perished.

After **ARISTOTLE'S** Fate amidst the Waves of *Euripus*, a new Race of *Peripatetics* started up, even worse than their Founder, who handed their Philosophy to after-Ages in so thick an Obscurity, that it has preserved it from the Satire and Ridicule of all Mankind, as understood by very few. Some there are to be found, who spend their Time amidst the Rubbish which these Commentators have filled the World with, and pore more than once on these God-like Treasures of Learning, and stick to them to no other Purpose, unless

less to shew the World the vast Pains they take to be deceived. Can there be a more pleasant Sight than to see these wise Champions wrangling with each other? The one armed with Propositions and Syllogisms, attacks his Antagonist in the same Armour: Both Bell-weatheres grow angry, and storm, fond of a Victory, which is worth but a Trifle, when obtained: Each, with all his Might, darts out his Barbarisms at the other, they entangle themselves in their Follies, and as neither knows how to extricate himself, they found to a Retreat, and when all the Ammunition is spent on both Sides, they think fit to keep Silence.

Thus far, Gentlemen, and no farther, launches out the ancient Philosophy: Let us therefore sentence for ever this Troop of Commentators, to be tied up in Chains and Libraries, Food only for Moths and Worms, and there let them quietly grow Old, free from the Sight of any Reader.

Joseph Addison.

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